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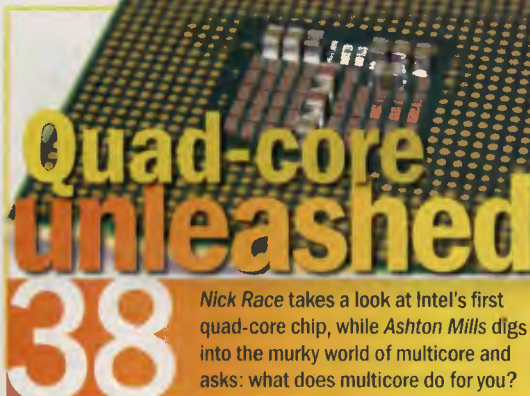
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IE7 RELEASED!

Your free taste of Vista.

The final version of IE7 is hot off the compiler and is giving XP users a free taste of Vista. *James Bannan* and *Dan Warne* road test it.



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This logo indicates a free, complete and unrestricted software package, available only on APC's cover DVD.

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TONY SARNO

Just when you thought dual-core chips were the next big thing (and after I splashed out my own money on a new dual-core PC), Intel unveils its plans to unleash quad-core into the world (see page 38). This will result in even-more-powerful PCs and will require a new round of hardware upgrades when it comes to market.

At the same time, Vista will usher in a massive new software upgrade cycle. First up, you'll need new PC security applications, as most of the existing ones won't work with Vista (actually, this is a good thing, as most suites are in dire need of a complete rebuild). Then you'll realise that several other applications won't work smoothly with it either, as I'm now finding out with my test installation of Vista. Given that the rumoured price of the Ultimate version of Vista is expected to be anywhere between \$600 and \$800, it's not far-fetched to suggest that your move to the Vista generation will cost you several thousand dollars (if you throw in the necessary hardware upgrades).

I would love to say that all this is outrageous and that we're hooked into a vicious cycle of upgrades by unscrupulous multinationals, and sometimes I even catch myself thinking this. That is, until I move from my primary PC, a dual-core machine running Vista RC2, back to my back-up computer, a Pentium Windows XP PC that was state-of-the-art just four years ago. The Pentium PC is horrible. It's slow. Its OS is clumsy. Rendering

of video is painful to watch. The only thing that's going to save it is Linux, which seems to do an infinitely better job than Windows when working with older hardware.

For all the computer industry's faults, it still manages to ensure that each new generation of its technology leaps well past the previous generation. I don't see these big jumps in performance and quality whenever a car manufacturer releases a new model.

I'm not referring just to PC hardware, but communications and internet technologies as well. The past year has seen unabated innovation in all areas of the infrastructure that delivers the net to your work or home. ADSL2+ broadband is becoming the connection of choice for serious users. VoIP has gone from being an experiment to a legitimate replacement for analogue telephony at home and in the workplace. Wireless networking is now accelerating towards the much faster 802.11n standard, with several Draft N devices now hitting the market.

It's such an exciting time in the internet industry, we will celebrate it with our inaugural APC Internet Technology Awards (page 16), in which you get to nominate and vote for the internet technologies and companies that are continuing the revolution that was started by the PC 25 years ago.

tsarno@acpmagazines.com.au



FOR ALL ITS FAULTS, THE INDUSTRY ENSURES THAT EACH NEW GENERATION LEAPS WELL PAST THE PREVIOUS ONE

STAFF FILE

Name: Peter Sbarski **Age:** 23 **Interests:** Programming, upgrading, gaming, writing and movies **Favourite book:** *Labyrinths of Reason* by William Poundstone **Favourite film:** Ki-duk Kim's *Spring, Summer, Autumn, Winter... and Spring* **Dream job:** Heading Google

Peter is the contributor we call on to take apart and explain new OS file systems. Or peer-to-peer technology. Or anything that requires an insanely curious and highly technical mind to decipher. With a computer science degree with first class honours from Monash University in Melbourne, Peter made a decision to pursue a postgraduate degree in the field of adaptive diagrams. He is now working on his thesis.

Peter loves to read blogs, traverse social-networking sites, plan new killer applications and play whichever game is currently on his desk. He also likes to imagine how he would turn Melbourne into the southern hemisphere's Silicon Valley, fix higher education, improve Australia's ICT standing and deal with Telstra.

Right now Peter is discovering the joy of Ruby on Rails, reading up on DirectX and considering whether to install the latest version of Vista. He only wishes he had more time for these things. Writing for APC provides Peter with an outlet to share his thoughts with others – and he reckons that it is one of the best jobs around.



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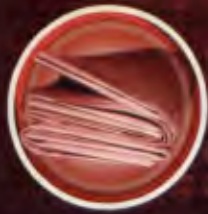
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ASUS guarantees 802.11n compatability

Now you can plough your dough into a Draft N router without worrying that you'll be left with a brick. *Dan Warne reports.*

ASUS has announced it will do what it takes to upgrade its Draft N router to the final 802.11n standard once it is released, even if this means hardware modifications.

ASUS WL-500 Draft N routers and WL-100 Draft N PCMCIA cards purchased during December are covered by the guarantee.

However, ASUS put some limitations on the offer: if a hardware upgrade is required, it will only be available for three months after the final 802.11n standard is made available; customers must pay the shipping costs to the ASUS service centre (ASUS will pay to return the router though) and ASUS won't extend the warranty beyond the original period.

Both products are based on Broadcom's IntensiFi chipset, also found in other manufacturers' routers, including some of the

newest Linksys and Netgear units.

However, no other hardware makers that have released pre-N products were prepared to meet ASUS' guarantee, or even discuss it. It was a firm "no comment" from D-Link and both Netgear and Linksys' spokespeople were out of the country. Belkin Australia was not able to provide an immediate response and deferred the query to its head office in the



USA.

Australian

network hardware maker Netcomm, which was stung in 2005 when it relied on a chipset maker's promise that an early ADSL chip would be upgradeable to ADSL2+ (but subsequently discovered it wasn't), said it had decided not to release any Draft N products.

Likewise, Raaj Menon of PC Range, the Australian distributor of Billion modems, said, "We've looked at pre-N products and the

results have been disappointing. We'll be selling the real thing when it's a proper standard."

The future of wireless video streaming around the home rests heavily on 802.11n, which promises to provide faster than 100Mbit/s actual throughput, but isn't expected to be standardised until 2007.

Intel recently conceded to delegates of Microsoft's Sydney Tech-Ed 2006 conference that the fastest existing wireless standard, 802.11g, wasn't up to speed for high-def video streaming.

At best, G provides actual throughput of around 20Mbit/s, but often drops back to 4Mbit/s or less if a computer isn't very close to the base station. With high-definition video streams averaging 25Mbit/s or more, 802.11g simply can't keep up.

Notebook hard drives hit 200GB

Perpendicular recording technology sees Toshiba pushing the notebook hard drive capacity envelope.

Notebooks are inching ever closer to being full desktop replacements, with Toshiba announcing a 200GB hard drive.

The MK2035GSS squeezes 277 megabits per square millimetre; Toshiba claims this is the highest hard drive density ever achieved.

It uses the new perpendicular recording technology, standing magnetic particles on their head rather than lying them flat along

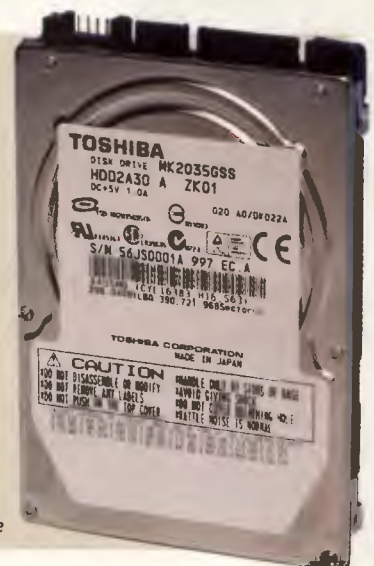
the length of the track. Other vital statistics include SATA II connectivity, 4,200rpm spin speed (supposed to be similar to 5,400rpm in longitudinal drives) and an 8MB high-speed cache.

Toshiba Australia could not comment on price or release date, but Matt Codrington, product manager, said: "The cost is still a little high to use in notebooks. We will be introducing a 200GB

HDD by the end of the year, but it won't be perpendicular. Once cost drops a little, you should see these surface in Q1 2007."

In the past, Toshiba has been forced to shoehorn two 2.5in hard drives into its Qosmio notebooks to provide adequate capacity for home theatre usage — less than ideal from a power consumption perspective.

Dan Warne



THE (A)PC REVOLUTION

December 1986

BUY IT FOR BOB

Special feature roadtests Aussie computer products: Including the revolutionary ECS-286 with an AT-style keyboard on an XT machine, the Hypertec Australian-made EGA card, and Aussie modems from Data Bridge, Pulsar and Netcomm at the heady speed of 1,200bit/s.



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Top ten tech predictions: 2007

Before you splash out on that new PC this Christmas, *Tim Gaden* takes a look at what's around the corner...

1 Vista
When it arrives in January, Microsoft's new OS will be the biggest story of the year. Redmond promises new "catch it before it fails" predictive diagnostics, lightning-fast 15-minute installs, intuitive interfaces and more to make Vista the most user-friendly OS ever.

2 Gigabytes go cheap
Hitachi will sell a one-terabyte hard drive this year and predict 8TB units by 2013. Cost per GB continues to plummet from around \$13.00 per GB ten years ago to \$1.30 per GB. Smaller 3.5in hard drives (a mere 80GB to 160GB) are expected to hit the \$65 mark. Notebook hard drives will go beyond 200GB.

3 GPS everywhere
When Nokia starts putting GPS into its mainstream N95 mobiles, you know it can't be far away from PCs. The applications aren't just mapping and navigation, either. With Sony and Ricoh announcing cameras with GPS, you'll be able to view other photos taken "near here". Online photos will become much less anonymous.

4 Quad-core CPUs
Both Intel and AMD will be selling them in consumer PCs

by mid-2007. Intel claims a 70% performance boost for gaming over the dual-core chips which were launched in 2006, with whole processors dedicated to the physics of a game's explosions. Assuming, of course, game developers take advantage of those extra cores.

5 Power efficiency?
Forget that. The new raft of ATI R600 video cards are rumoured to need 250W (500W in an SLI configuration) and quad-core CPUs will be hitting 130 watts again. Prepare to spend lots on a kilowatt (or greater) power supply, and install aircon at home.

6 Death of the HTPC
Intel's Viiv strategy will look less nebulous as people realise that a full PC in the lounge room is overkill. Cheaper set-top boxes that tap into a PC elsewhere will ultimately win out. Problems with streaming media over home networks will be improved in the short term by 85Mbit/s powerline networking, while Apple's iTV will provide the marketing push needed to kickstart interest in the media extender category.

7 High-def goes mainstream
Price will no longer be an excuse... consider Taiwanese

LCD maker Chimei's 22in monitors with near full HD resolution (1,680 x 1,050) going for close to \$500.

8 Tri-wireless notebooks
Intel will put Nokia HSDPA chips into its Santa Rosa platform (as an option) alongside WiMax and 802.11n, so you can get broadband over mobile networks — without a data card. But with 802.11n not expected to be ratified till 2007, don't expect to see Santa Rosa till late 2007 at the earliest.

9 Laptops to last a full day
More power efficient CPUs and better battery technology tempt Intel and AMD into promising an 8-hour battery life for laptops sometime in 2007. Work all day and leave that power supply at home. Or, better still, work all day at home and leave the power supply at work. Keep fire extinguisher handy.

10 The Blu-ray vs HD-DVD battle
This will rage on for at least another year with neither side prepared to take the wooden spoon prize. Peace negotiations may be hastened, though, by the development of a hybrid player that can cope with both formats (or alternatively a hybrid disc).



Windows Live: Google on steroids or lame tie-in?

Whether Microsoft's family of Live services is ready for prime time or not, one thing's sure: Live is Microsoft's future.

Last year, Microsoft's new chief software architect, Ray Ozzie, ordered every business unit at Microsoft to create one or more free, ad-supported, subscription-based and/or hosted services.

Since then, Microsoft has fielded two dozen so-called Live services. The same way that Xbox Live services are complements to Xbox, Windows Live services are add-ons to Windows and Office Live services are adjuncts to Microsoft Office.

Other current and future Live offerings — aka "CRM Live" and "Tuscany" (or Visual Studio Live) — are expected to launch as brand-new products, rather than add-ons.

As anyone checking the Windows Live Feedback web site can see, the actual tally of Windows Live services is in excess of 40. And that doesn't even include a number of not-yet-but-likely-to-be-unveiled services, including Windows Live Drive, Windows Live Video ("Warhol"), Windows Live Marketplace ("Agora") and Windows Live Healthcare.

So what's *not* on Microsoft's not-so-short list of services that should be? And what kinds of Live services should be erased from the Redmondians' whiteboards before they ever have a chance to go live?

Google and Yahoo!, the MSN/Windows Live team's foremost competitors, have lots more

services on their respective plates than Microsoft does.

Google has registered roughly 500 domain names, according to Google watchers around the web. On the Google Products site, the Microsoft archival lists about 40+ services which it already has fielded.

Yahoo!, meanwhile, has an even more ambitious list of services — in excess of 100 — as itemised on the Everything Yahoo! site.

If I were a betting woman, I'd wager that Microsoft will likely field something in the analytics space, akin to Google Analytics (codenamed "Urchin"). After all, Microsoft earlier this year acquired DeepMetric, an online analytics firm. Seems like Microsoft could and should make that technology available to not just its Live customers, but its enterprise users as well.

Another likely candidate: archives. In early September, Google released an internet archive that allows web browsers to view articles from publications across the decades. Why couldn't and shouldn't Microsoft do the same? There's huge potential for other kinds of web content, including video and audio. The possibilities are

truly endless, as they'd be for Microsoft as well.

Don't be surprised to see Microsoft morph its "Max" 3D photo/video gallery showcase app into a service, either. Originally developed to showcase some of Windows Vista's graphic-intensive technologies, Max could become more like Google's Picasa as it moves forward, sources say.

Yahoo! has a few services up its sleeve that Microsoft has yet to emulate. There are lots of Yahoo! sports-enthusiast services (Fantasy Football, NASCAR, FIFA World Cup, NHL hockey, etc.). It wouldn't be too much of a stretch for Microsoft to develop similar services, either as Xbox Live-type offerings or as pure Windows Live versions.

Yahoo! and Google both also have a variety of sex/dating services. I don't know about you, but I would be a little queasy about registering on Windows Live Dating or Windows Live Sex Chat with my Microsoft Passport (Live ID in the new nomenclature). Even a Live service like the potential Google "HowtoBuyaWeddingRing.com" seems like a bad idea.

We're just at the dawn of the Microsoft Live era. Where would you like Microsoft to go (and not to go) in that space today — and tomorrow? Email: epinions@acpmagazines.com.au.



WE WILL TAKE OVER THE INTERMERNETS!

Inexplicably and wildly popular social networking/animated GIF web site MySpace is sick of sending referral traffic over to the competitors. It's time to cut out the middle-man, its corporate sugar daddy says.

"If you look at virtually any Web 2.0 application, whether it's YouTube, Flickr or Photobucket... almost all of them are really driven off the back of MySpace," said News Limited CTO Peter Chernin, speaking at a Merrill Lynch Media and Entertainment Conference in Pasadena, California in September.

Chernin says his latest strategy is now to simply clone the most successful online services so that MySpace can become a one-stop social-networking shop.

Er, was Chernin taking a nap in 1995? Microsoft already tried this... it was called The Microsoft Network and it flopped when Bill realised people have this annoying penchant for choice and freedom.

It's the intermternets, it's not a truck — it's a series of tubes, and we want a choice of what we feed down them!

Dan Warne

Want to nominate a dumbest moment in tech? Send an email with the subject line "Dumbest Moments" to dwarne@acpmagazines.com.au. All correspondence becomes the property of APC.

WindowsWatch



Mary Jo Foley is the editor of Microsoft Watch (www.microsoft-watch.com). She sounds off exclusively for APC on Windows each month.



Extreme geek

Christina Chatfield: Mac's model user

Music designer, synthesizer freak — and now APC Extreme Geek.

We normally try to feature Australian geeks in Extreme Geek, but when we spotted 22-year-old Christina Chatfield online wearing only a MacBook Pro, we felt it necessary to set up an interview.

Her people spoke to our people and the rest is history.

Recent-model Apple laptops run hot, so by tenuous extension, it's only natural that Mac users are hot too... and Christina is a case in point. She was dubbed "Mac Chick of the Month" by the Macenstein web site.

Despite the saucy shots, she is a serious hardcore geek. She won the "Women in Music Technology" award at Boston's Berkley

College of Music and is a freelance music designer, making sound effects for TV and web sites.

After three years of geek training, where she "came in barely knowing how to use Propellerheads' Reason and came out knowing how to program with Max/MSP and Csound," her training is now complete: "I feel pretty geeky when I'm at a club and the words 'Do you hear the envelope on that kick drum? What's the exponential curve on that Mac tone?!' come out of my mouth."

While she loves her Macs and works them hard with Logic Pro, she's no bigot: "PC music design programs Cubase and Pro Tools are

pretty similar to Logic." Being a women and a geek is not all easy: "I've experienced lots of 'Wow, you're into synthesizers and you're a GIRL?!'"

"When I posed for a photo that appeared in a feature on Macenstein.com, some other web sites picked up on it. The comments were surprising. People thought I was a hired model posing with the computers, and I probably didn't know how to use them. Clearly people are still not used to women being tech-savvy or into computers."

You can catch up with more of Christina and her music design at her web site, www.anitserk.com.

Tim Gaden

So, um... which one of us APC staffers gets to deliver her extreme geek prize?



HOW GEEKY ARE YOU?

Have you wired up your car? Shared your home media library with five family members in three states? Made a 16 terabyte file server? If you've done something interesting with computing technology, APC wants to hear about it. Email a description of your project to www@apcmagazines.com.au and include photos (we need at least one of you pictured with your gear). This month's Extreme Geek wins a NETGEAR WNR834B

RangeMax NEXT Wireless Router and a WN511B RangeMax NEXT Wireless Notebook Adapter (worth \$528 in total). This combination delivers unprecedented wireless speeds and complies with the draft 802.11n wireless standard. The RangeMax NEXT line offers users speeds 15 times greater than standard 802.11g products (with 10 times more wireless coverage). For more detail on NETGEAR, visit www.netgear.com.au.

PC bot ready to roll

What we've really been waiting for: x86 R2-D2 XP!

We last covered White Box Robotics in late 2004, when the company was talking up its model 912 robot based on a lightweight PC. Two years on and the company is ready to deliver, with its model 914 offering the chance to own a PC that looks a lot like R2-D2.

The 914 costs US\$4,995 (or US\$3,995 for a version without the slick case), a stiff price for a 1.3GHz Via EPIA processor, 40GB hard drive and no

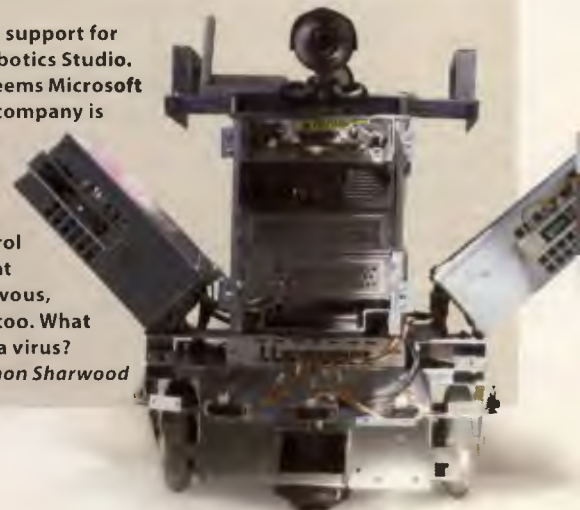
monitor. However, the price starts to look more realistic when you consider the motor and pair of 45V lead acid batteries that make the robot move. There's also a custom enclosure with eight 5.25in device bays, plus an I/O board offering eight analog inputs and eight digital outputs.

Open source software from The Player Project is one way hardware hackers can put these facilities to work, but White Box

has also added support for Microsoft's Robotics Studio.

Indeed, it seems Microsoft is the way the company is headed, as the machine ships with Windows XP and a Windows control program. If that makes you nervous, we're worried too. What if the bot gets a virus?

Simon Sharwood



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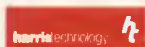


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Vista business launches

The top end of town gets first crack at the finished version of Vista, with an exclusive Enterprise edition you'll never see on the shelves, reports **David Flynn**.

Five long years after Windows XP made its debut and the "Longhorn" pin was planted in Microsoft's roadmap, Vista has crossed the finish line. By the time you read this, the master code will have been signed, sealed and sent to disc factories and PC builders.

But not everyone has to wait until January, when Vista is expected to appear on shelves and pre-loaded systems. Thousands of Australian companies, ranging from small businesses to corporate goliaths, will be the first to get their hands on the fresh-baked Vista.

They're members of Microsoft's two business software programs — the bulk-buy Volume Licensing scheme and the subscription-based Software Assurance plan — and they'll have access to Vista from almost the moment it goes gold, some 100 days before the rest of the Windows world.

So what will they see? For starters, they'll be reaching around at the top of the Vista tree. No dizzying mix of eight versions of Vista (see APC October 2006, page 16) for them. Most will be gunning the engines on Vista Business edition or the exclusive Vista Enterprise package which is available only to Microsoft's anointed business buddies — not to retailers, OEMs or end users.

The relationship between Vista Business and Enterprise mirrors that

of Vista's Home Basic and Home Premium skews, with a cheaper and less feature-laden junior partner capped by a "superset" boasting an extra serve of goodies. Vista Business is the junior executive in this partnership, but both the Business and Enterprise packages have features not found in the Home products. It's only in the \$750 Vista Ultimate box that you get the works.

As such, Vista's two built-for-business editions represent Microsoft's most dedicated assault on the corporate market since the release of Windows 2000. Windows XP may have adopted 2000's industrial-strength codebase, but

attempted to define the market using the loosest of categories: "home" and "professional" users.

Jeff Putt, the director of Microsoft Australia's Windows business group, says that Vista's new names are intended to target the operating system and its multitude of versions "by audience".

"Rather than people having to ask themselves 'Am I home or professional?', we've gone less for feature-based names such as Media Center Edition and Tablet Edition. Instead, we've included those features in products based around and named for their likely audiences, such as Vista Business, Enterprise

and Home. It's more customer-focused," Putt explained to APC during a pre-RTM (Release to Manufacture) briefing.

Duncan McGilligan, Microsoft's local consumer marketing manager for Windows, revealed an additional Small Business version of Vista was once considered to sit alongside the Business and Enterprise builds.

"There was a Small Business version and a Business version, but it was decided that the features were so similar that it would confuse the market even more by having those extra skews. Besides, how do you differentiate a small business from a business? Most small business owners don't think of themselves as a small business, especially if they're a larger small business."

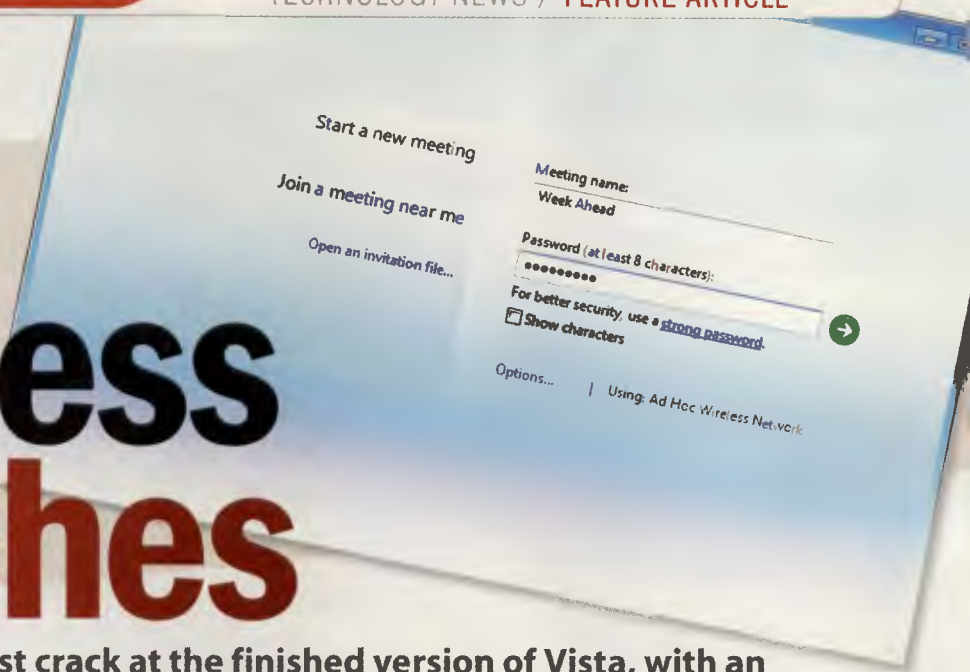
Putt says the reasons for separate Business and Enterprise lines were more clear-cut. "We didn't want to add a whole bunch of enterprise-level functionality, and thereby cost, into a business skew." He emphasises that Enterprise "is going to be the key product for volume licensing."

One of its top-level capabilities is the hard disk encryption technology known as BitLocker. This applies full-volume encryption across the entire hard disk, so that its contents are protected even if the disk is removed and attempted to be accessed on another system.

"There's been a real move towards mobility and far more

INCLUDED FEATURES	HOME PREMIUM \$455	BUSINESS EDITION \$565	ENTERPRISE EDITION*	ULTIMATE EDITION \$751
Backup	Yes	Yes	Yes	Yes
Previous Versions	No	Yes	Yes	Yes
NTFS Encrypted File System	Yes	Yes	Yes	Yes
BitLocker encryption	No	No	Yes	Yes
Virtual PC Express	No	No	Yes	Yes
DVD video authoring	Yes	No	No	Yes
Media Center support	Yes	No	No	Yes
Tablet PC support	Yes	Yes	Yes	Yes
Domain support	No	Yes	Yes	Yes
Offline folders with client caching	No	Yes	Yes	Yes
Remote Desktop	No	Yes	Yes	Yes
Meeting Place	No	Yes	Yes	Yes
Windows Faxing	No	Yes	Yes	Yes
Windows Web Server	No	Yes	Yes	Yes

* Vista Enterprise is available only on Volume Licensing and Software Assurance plans.



Jeff Putt, Windows business group director for Microsoft Australia.

Vista Business may not include the power admin tools of Enterprise, but caters to the needs of the average business end user.

1.2 chip can use a USB

memory key to actively use

BitLocker encryption and volume protection. However, this doesn't protect the system during boot-up — nor does it make allowances for what happens if you've got a flaky USB flash drive which gives up the ghost and leaves you locked out of your machine.

Also, if your drive has two or more partitions — typically one for the OS and apps, and a second for data — BitLocker protects only the

people buying laptops, particularly for business, and with that comes the need for increased security," Putt reflects. "You're unlikely to have your desktop PC stolen from your car, but we've all seen stories where laptops are stolen, the hard disk pulled out and information is stolen off the drive."

BitLocker achieves the same end result as the file- and folder-based Encrypting File System feature of NTFS, but with considerably stronger hardware-based encryption.

The simplest implementation relies on the PC's motherboard being factory-fitted with a Trusted Platform Module (TPM) version 1.2 chip — a commonplace item in most desktops and notebooks aimed at business users. BitLocker uses the TPM to generate a 128-bit or 256-bit encryption algorithm which is applied to the entire boot volume.

The drive's data is protected even during the boot-up process (which Microsoft calls "Secure Startup"). Machines without a TPM

volume on which Vista is installed. Users will still want to apply NTFS encryption to their data drive.

Also unique to Vista Enterprise (and Ultimate) is the ability to create and manipulate a single OS image under the new Windows Imaging format.

"Customers with a fleet of machines typically create an image



of their standard build for each hardware brand and also each type of machine, as well as for each language if they're a multinational business," explains Putt. "The cost of maintaining all these separate images is quite high. Vista lets you virtualise the Windows image into a single image which can be deployed regardless of the brand

Unlike its sibling, Virtual PC Express runs only one "virtual machine" at a time. In July this year, however, Microsoft tore the \$220 price tag off Virtual PC 2004 and made it available as a free download.

While Vista Enterprise packs in the admin power tools, Vista Business edition is closer to the



VISTA'S TWO BUSINESS EDITIONS REPRESENT MICROSOFT'S MOST DEDICATED ASSAULT ON THE CORPORATE MARKET SINCE WINDOWS 2000

or type of hardware — or even the language."

Administrators can also keep their image fresh by directly applying patches to the image file. Under XP this is a cumbersome and time-consuming process of loading, updating and then re-capturing the image.

Windows Imaging technology is used as a "single source" installer on all Vista DVDs — one master file contains images of each edition of the OS — but it's only with the Enterprise and Ultimate editions that users will have access to the tools to manipulate these and create their own customised and fully automated Vista installation images.

However, one much-touted component of Vista Enterprise has now moved within reach of even a Home Basic user. Microsoft originally planted a cut-down "Express" version of its standalone Virtual PC virtualisation software into the Enterprise package, to allow applications that refused to run under Vista to load inside a window which emulated an older version of the OS.

needs of the average business end user. It goes one-up on Home Premium with the inclusion of the Remote Desktop and Meeting Space network collaboration (although we reckon the later would be particularly appealing to students or anyone who mingles with laptop-equipped mates). Logically enough, Business systems will support Tablet PC hardware but not Media Center PCs (Home Premium does both), and they also roll in the little-used Windows faxing capability.

The most crucial difference is that none of the Vista Home skews allow users to join a domain — to connect to your company's domain you'll need Vista Business, Enterprise or Ultimate.

Business users will also be able to retrieve older versions of updated documents, through the "previous versions" facility based on Windows Server 2003's Shadow Copy. This keeps a recoverable backup of documents each time a new version is saved and can also be used in event of accidental deletion — even if the Recycle Bin has already been emptied. **BTIC**



BitLocker encryption is one of the top-level capabilities of Vista Business.

Motion engines

A microscopic device called an accelerometer is creating new ways for controlling everything from tablet PCs to iPods and game consoles.

John Gillooly reports.

The humble accelerometer was once just a name on a parts list, but — thanks to some unlikely proponents — it has become the frontline armament in one of the biggest marketing battles of 2006. Technology that prevents notebook hard drives from destruction when dropped and allows Mac users to swing their notebooks like true Jedi is driving a whole new generation of applications.

So where can you see this new technology in action? It may be a world away from corporate notebooks, but both the Nintendo Wii and Sony Playstation 3 have controllers focused on inbuilt motion sensing abilities — a huge departure from thumbsticks and buttons as the sole means of control. It's the sort of tech also being seen in iPods, tablet PCs and, soon, future portable devices.

TINY MACHINES EVERYWHERE!

Computing users are familiar with electronics on a nanoscale, but most don't realise that they also

regularly use nanoscale mechanical devices. Accelerometers are a perfect example of a class of devices called Micro-Electric-Mechanical Systems (MEMS).

MEMS devices are constructed with the same photolithographic processes employed in semiconductor manufacturing. The difference is that semiconductors are a collection of electronic circuits built into silicon, while MEMS are mechanical structures built onto the silicon. This has allowed the creation of everything from microscopic steam engines to complex gearboxes in silicon.

Accelerometers use this technology in order to measure movement to a high level of precision. The simplest kind of accelerometer came into widespread use in the 1990s as a replacement for mercury switches in car airbags. The accelerometer detects sudden deceleration and triggers a shot of compressed gas, deploying the airbag and hopefully saving a life. These are essentially

one-shot devices, designed to be replaced once they are triggered.

There are many different means of motion detection employed by accelerometers. Generally speaking, an accelerometer requires something capable of movement and a means of measuring the direction and force of the movement. This can be done with piezoelectric crystals that generate a measurable charge when compressed, but more complex systems involve measuring the movement of an object in 3D space rather than a simple directional squeezing. This object can be physical, an electrical field or even detecting movement of a beam of light. When movement occurs, the strength and direction is output, allowing the device containing the accelerometer to react accordingly.

NEW-WAVE GAMING

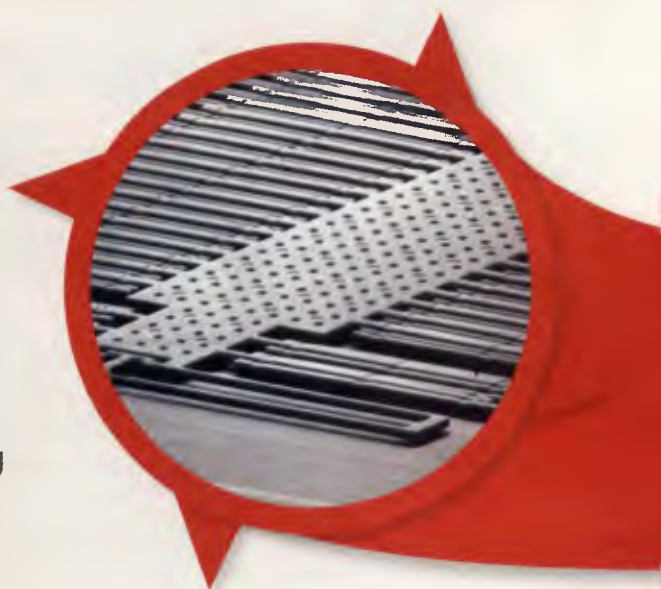
Over recent years, concerns have been expressed on multiple fronts about the growing complexity of console controls. While seasoned

gamers feel at home manipulating two thumbsticks and four trigger buttons, others feel daunted by such a confusing system.

Games like Eyetoy Play, Singstar and Guitar Hero have been highly successful thanks to the employment of non-traditional control schemes: camera, microphone and guitar controller respectively. However, it is with the Wii and PS3 that we see the first widespread implementation of new control methods right out of the box.

Nintendo's solution is nicknamed the Wiimote due to the controllers resemblance to a remote control. It is designed so games can be controlled by moving the controller, rather than twiddling a thumbstick. It does this through two components: an accelerometer which senses tilt on the controller, and motion-sensing which allows the user to wave the Wiimote through the air to control onscreen action.

While Sony's new SIXAXIS controller is visually similar to the



Accelerometers aren't new, but the deployment of these components in a new range of consumer electronics devices is bound to set the world in motion.



ACCELEROMETERS USE MEMS TECHNOLOGY IN ORDER TO MEASURE MOVEMENT TO A HIGH LEVEL OF PRECISION

Playstation 2's dual-shock controller, it also employs tilt sensing to add another dimension to control. It doesn't feature motion-sensing however, and pundits have called the motion-sensing a thinly veiled attempt to head Nintendo off at the retail pass.

What both these controllers have in common is the employment of an accelerometer to enable the new control systems. Accelerometers are not new devices; they are found in everything from car air bag controllers to hard disk drives — however, it is with the marketing push behind the new consoles that accelerometers have become the hot, new thing.

HARD DRIVES AND TABLETS

Nowadays there are several types of accelerometers available. They are capable of measuring movement in multiple directions with high precision, which has led to widespread use of the components in computing. They tend to use microscopic cantilevers or similar devices to detect movement.

Prominent examples include Seagate, which uses accelerometers in its notebook hard drives in order to prevent drive damage if a notebook is dropped. When the accelerometer detects sudden movement, it quickly moves the slider containing the read heads off the disk platters completely. This avoids the major cause of drive destruction during a fall, where the heads bounce off the platters on impact, breaking tiny fragments off the platter surface. These fragments can easily destroy a hard drive by bouncing around inside.

Toshiba has also used accelerometers in its tablet PCs. While these provide base functionality like shifting the screen aspect when the tablet PC is turned from portrait to landscape orientation, Toshiba has also historically included a control panel for the accelerometer that

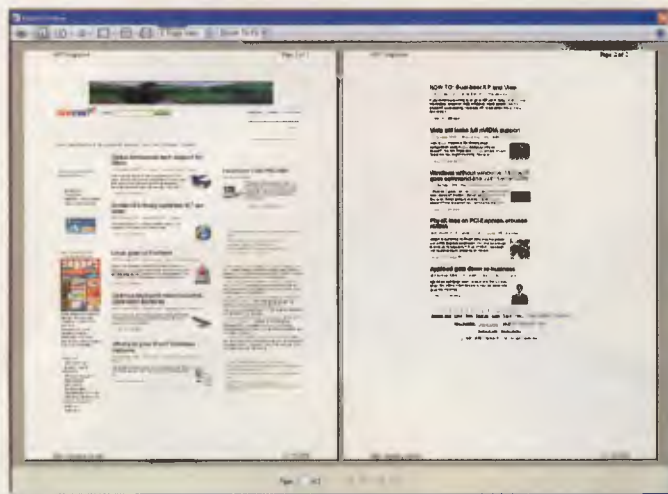
allows users to bind functions to actions such as shaking the tablet. There have also been proof-of-concept games written that require the tablet to be moved around in order to control onscreen action.

Even the high fashion world of iPod accessories has recently received a prominent accelerometer-based entry. Nike and Apple have collaborated on a device that slots into certain Nike shoes and wirelessly beams data to an iPod nano. Essentially this is an accelerometer that measures the number of steps taken to provide feedback to joggers and walkers on everything from distance travelled to calories burned.

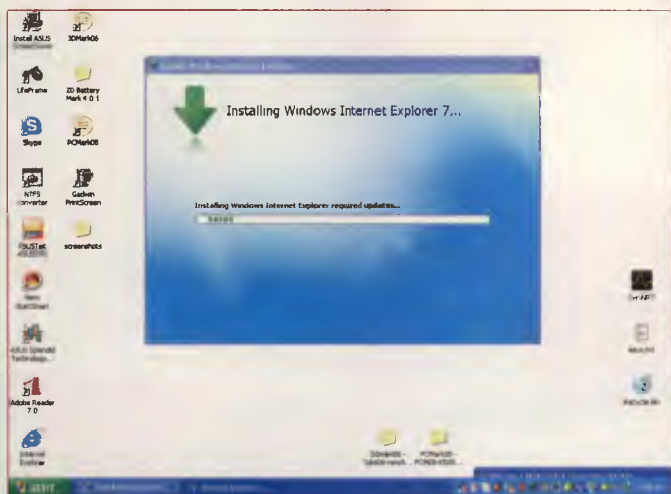
Apple also inadvertently created a craze when it included an accelerometer in the MacBook Pro. Included to detect sudden movement, much like Seagate's hard drives, its crowning achievement was when an

enterprising developer wrote an application that translated the movement of the notebook in geekily familiar lightsaber swoosh sounds. Unsurprisingly, a cavalcade of MacBook lightsaber fight videos hit the net soon after.

While they have traditionally been boring, passive devices, this new wave of accelerometers is helping us change the way we interact with our technology. With the launch of the Nintendo Wii just around the corner, gamers are set to enjoy a whole way of interacting with the imagery in front of them. Much like the touch-screen is an integral part of Nintendo's DS handheld, the tilt sensing in the Wiimote is the core around which Nintendo has built the console. With Sony following suit in the form of SIXAXIS in a few years time, we may look back and wonder how we could have enjoyed games — without waving our controllers around. **BTIC**



Amazing shrinking web pages: it seems kind of obvious to us, but Microsoft has finally figured out how to fit web pages on A4 for printing!



Please hold, your installation is important to us. Press the "any key" if you wish to reboot.



IE7 released

YOUR EARLY TASTE OF VISTA ON XP

The final version of IE7 is hot off the compiler — and it's giving XP users a free taste of Vista. **James Bannan** and **Dan Warne** gave it a road test.

There's a lot to like about Internet Explorer 7: it has tabs. It has anti-phishing technology. It has RSS-feed-reading built in. It has a multi-engine search box. It can finally print web sites without cutting

half the page off. Plus, the often-exploited ActiveX technology is off by default.

And, here's the part that we like the most: it will be automatically downloaded onto every Windows XP computer via Windows update

(however, once it's downloaded, you can opt not to install it). This is, of course, controversial for many reasons — not the least of which is the fact that it makes installing competing browsers far less attractive. But what it

does do is blow away the cobweb-shrouded, creaky, featureless piece of junk that is Internet Explorer 6. Plus — it's free. Apart from the long-awaited Service Pack 3 for XP, it's one last hurrah for XP before the release of Vista.

FIREFOX 2.0 RELEASED

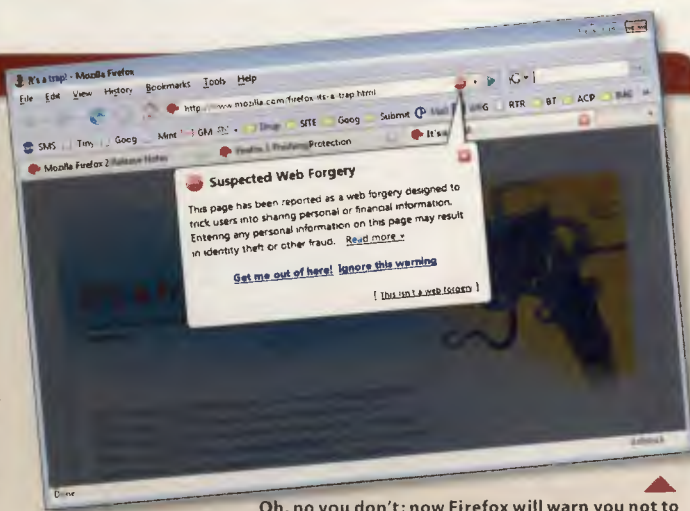
Microsoft may have largely caught up to the feature set of Firefox 1.0 with IE7, but upon the release of the final browser, it was immediately leapfrogged by the open source community with the major new release of Firefox.

New Firefox 2.0 features include: the ability to restore a browser session (if you close Firefox, the next time you open it, it will offer to restore all the tabs that you had open); in-line spell checking, like Microsoft Word's, with squiggly red lines under misspelled words when you're entering text into a form;

a fully integrated RSS reader and anti-phishing filter that references (and allows users to contribute to) Google's database of known phishing sites.

Firefox 2.0 has also had a visual appearance update: buttons now glow when you hover over them and tabs now have close buttons on each individual tab.

And of course, Firefox runs on just about every operating system, so you can use whatever computer you want and keep bookmarks in sync between them with the Foxmarks extension (www.foxcloud.com).

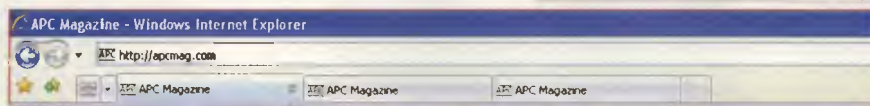
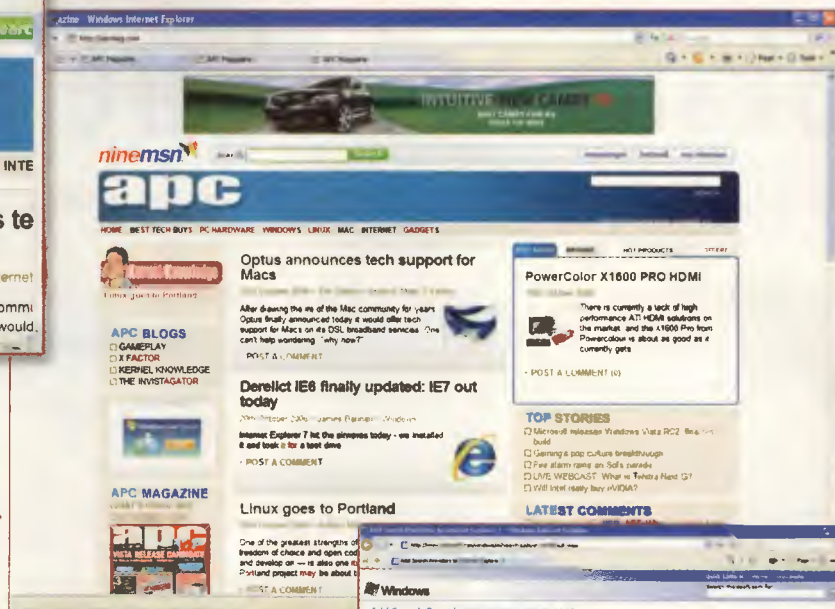


Oh, no you don't: now Firefox will warn you not to put your online banking password into scammers' web sites.



▲ Dropped your contact lens? You now have the option of zooming in on a whole web site — not just enlarging the text.

▶ IE gets the Aero look: yep, it's totally incongruous with everything else in XP, but hey — so is Microsoft Office.



▶ BYO search engine: if you want to be able to search rarebutterflies.com through IE7, now you can.

INSTALLING THE BEAST

The 15MB download (www.microsoft.com/windows/ie/default.msp) is fairly painless to install. If you've previously installed any beta version of IE7, you'll have to restart twice; otherwise, if you're upgrading from IE6, everything gets done in one step and there's only one reboot needed.

Microsoft forces you to validate your copy of Windows using WGA before installing IE7, so if you are "not a genuine customer", you'll be stuck with IE6.

IE7 will migrate all your previous IE settings — homepage, connection settings, favourites and so on. What it won't do, though, is migrate IE7 beta application settings like default search provider or Phishing Filter. When you first launch the final version of IE7, you'll be asked to configure IE again with required settings (search provider) and other optional settings. Kudos to Microsoft: this extra step means browsers won't be set to MSN Search automatically upon install.

CLEARER RENDERING

Microsoft now asks whether you'd like to "see web pages more

clearly" upon installation, too, which launches the ClearType Tuner. ClearType has been around since XP as a PowerToy, and it's now built in to Vista. It uses sub-pixel rendering on LCD displays to make text appear much smoother (similar to how a PDF looks in Adobe Acrobat).

From a rendering and functionality perspective, this final release works very well. No unexpected problems were encountered — all previously-installed plug-ins and ActiveX controls (like Java, Flash and Shockwave) work fine with no re-installation necessary.

For those of you who have been playing with IE7 through its build process, there are no surprises and no major changes in the final release. From a look-and-feel perspective, IE7 RC1 was pretty much the final release, anyway — this is simply that build incorporating a few more bug-fixes. For those of you who have avoided the pain and headaches of beta testing, you're in for a pleasant surprise. IE7 is far superior to IE6 in every single way. So, download and get surfing! **ETC**

MICROSOFT PIMPS EXTENSIONS

Microsoft is trying hard to build up an online repository of extensions for IE7, to stay competitive with Firefox's massive archive (<http://snipurl.com/tyrv>). The IE Add-ons web site has some useful ones, but a paucity of freeware extensions shows IE7

extension developers are in it for the money, not the glory. Nonetheless, there are some reasonable ones, like Windows Live Writer, a tool that lets you post to blogs from IE using a faster, non-web interface (www.ieaddons.com).



▲ Glowly goodness: trouble is, most of the add-ons cost US\$29.95 each.

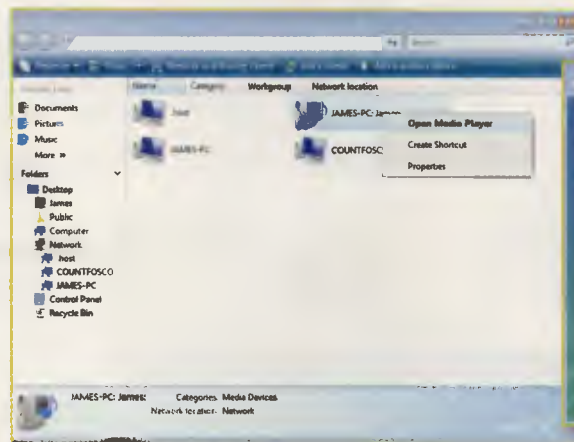
Share and share alike

Windows Vista, when paired with Media Player 11, has got the goods to help you with your private media setup.

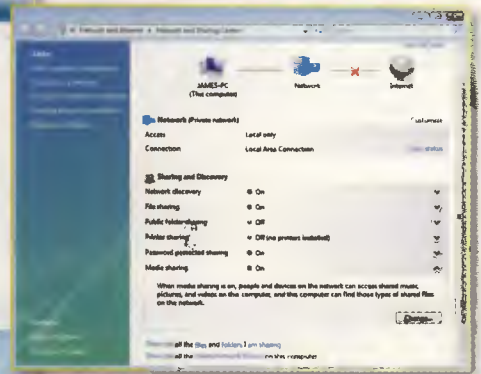
We all love our digital media, but as home networks get bigger and more complicated, users are turning more often to streaming solutions to get their music, pictures and movies from one end of the house to the other. This generally involves some sort of dedicated third-party solution, or a mixture of free lightweight tools to get the job done.

With Windows Vista, Microsoft has tried to make the whole media-sharing process much easier, leveraging off Media Player 11 and Vista's in-built capacity for peer-to-peer networking. Clients like the Xbox 360 or other hardware-based digital media player and Vista-based computers can connect to a primary Vista computer with media sharing enabled. The PlaysForSure web site has a list of compatible devices (www.playsforsure.com). The network must be a private (home or office) wired/wireless network — media sharing does not work over a public network.

Media sharing works for music files (WMA, MP3 and WAV), video files (WMV, AVI, MPEG-1 and MPEG-2), pictures (JPEG, JPG and PNG) and playlists (WPL and M3U). According to the media-sharing



Media Player 11 is intuitive at finding media content and putting together a catalogue.



documentation, other file types *may* be sharable, "depending on how your computer is configured" — this basically means that if the content is accessible and Media Player can catalogue it, it should be sharable. But, obviously, Microsoft isn't going to support anything beyond what it has explicitly stated.

The content must be organised in the Media Player library first, meaning it has to exist in folders which Media Player on the host computer is capable of monitoring. Luckily, Media Player 11 is pretty intuitive at finding media content and putting together a basic catalogue. For a more advanced library catalogue, you'll need to edit tags and metadata to give Windows more information to work with.

Enabling media sharing is very straightforward. Go into the Network and Sharing Center (right-click on the networking icon in the system tray), expand the Media

Sharing section under Sharing and Discovery and click Change. Tick "Share my media" and then OK. The Media Sharing page gives you a choice of available devices to share media to. The default option is "Other users of this PC", which may or may not be relevant. Once media sharing is enabled and other devices come online, the computer will detect them and prompt you to configure sharing.

Click on the Settings button and you can configure exactly how you want media sharing to work. By default, other devices will see the content shared out under your username — you can also specify what types of files are to be shared (but not file types) and you can filter out content based on its star rating and/or parental rating. These settings can also be applied per device — once a device has been authorised to share media, highlight it and click Customise (and the same

options available), which will overwrite the default settings for that device.

Once media sharing is up and running, the computer now appears twice on the network — once as the actual Windows-based host and also as a Windows networked media device. This is what other computers and devices will see on the network. From an authorised Vista-based client, simply right-click and select Open Media Player. Media Player on the local machine launches, with content visible from the network device. And it's that easy.

A nice feature is that the help documentation is comprehensive — not only in how to perform each step, but also in explaining the implications of media sharing, how it works with Windows Firewall and security, and answering questions about DRM and online/subsription purchases. Users will find it hard to put a foot wrong. **END**

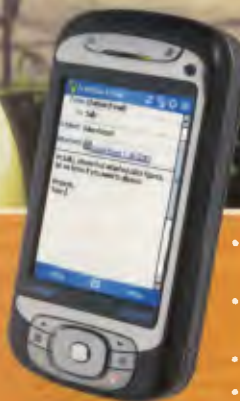


HastalaVista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.

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Putting a lid on DRM

Can an intellectual property “manifesto” save the world from the perils of overzealous copyright police?

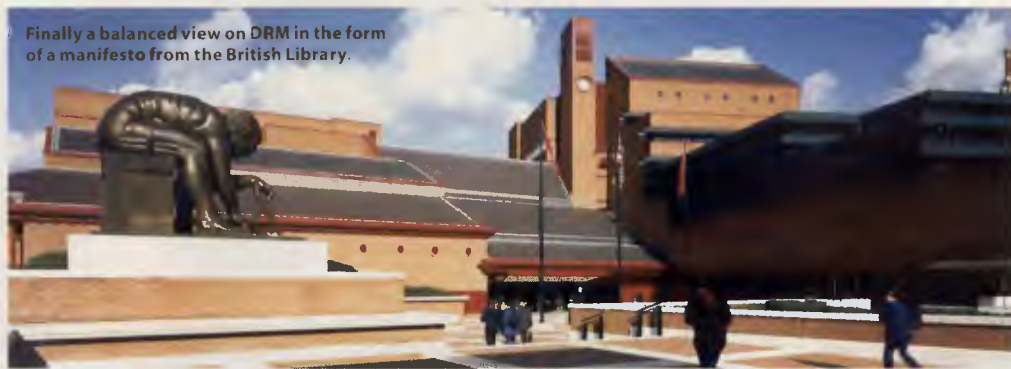
Now this is a refreshing change: balanced input on the universal intellectual property debate, this time in the form of a manifesto from the British Library (see www.bl.uk/news/pdf/ipmanifesto.pdf).

It does what so many have failed to succinctly explain: why intellectual property isn't all about making money, but advancing society as well — an area for which governments frequently seem to have an uncanny blind spot.

The manifesto is an important piece, not only because it comes from such a reputable source, but because it notes intellectual property is the core estate of copyright and patents — and remember, it's “software patents” established in the US and now Australia (but rejected in Europe) that are the antithesis to Linux and open source development.

But onto the manifesto. The British Library lists a number of key points it believes laws need to address — and though intended primarily for the British Government, they apply equally to the US and Australia as well:

1. That the digital medium is as valid as analogue, and all



Finally a balanced view on DRM in the form of a manifesto from the British Library.

limitations and exceptions of IP law as it applies to analogue should apply equally to digital — including “fair use” exclusions (typically for criticism and review, news and education).

2. Technologies that deal in restricting access to content — aka DRM — should not exceed the law. As it is now, DRM can forcibly stop a user accessing content even if, for example, fair use rights apply. More importantly, even if the content then enters the public domain, if the DRM technology doesn't also expire then the content remains perpetually out of reach.

3. For the library as a special case, copying for the purpose of archiving sound and film is not legal.

Vitaly, recommendations are also made to not extend copyright terms unless “empirical evidence” to the benefit of society can be proven — this observes that IP law should “protect the rights of those who have created, but not at the expense of those who wish to

create”. Amen — are you listening to this, Canberra?

And, while the UK casts a wider net for fair use, including time-shifting (i.e. recording) of TV programs for personal use, Australia has no such amendments. There is currently no exception under Australian law for fair use as it applies to the individual, such as making copies of products you own — software, video and music for personal use, nor recording TV (despite the plethora of devices on the market for doing so). Copying and encoding a CD to play on your iPod, for example, is breaking copyright law.

The second point regarding DRM technologies is critical for Australia — as of next year, and thanks to the AU-US Free Trade Agreement, Australia is required to implement sanctions against the circumventing of technological protection measures (TPMs). In other words, it will be illegal to play DVDs under Linux, as it is now in the US, due to the necessary use of the

famous DeCSS code. This has a certain irony, with the large number of Linux-based DVD-playing PVRs and media centre PCs currently on the market today.

Also, thanks to the AU-US Free Trade Agreement, which piggybacked with it draconian DMCA-style restrictions for Australia, copyright is now life plus 70 years. You have to ask, how does this benefit society? While the British Library is happy to accept this for the UK (as it still allows it to ultimately preserve works for the common good), it doesn't address the use of such material in the public domain for the common good before this term. As any musician, scientist, author or artist can tell you, we are all inspired, learn from and build upon the works of others. If those works are locked up, even for a single year longer than necessary, society then suffers.

Isaac Newton said it best: “If I have seen further, it is by standing on the shoulders of giants.” [ETC](#)



LinuxWindow

by
Ashton Mills

Editor of the Linux Pocketbooks series, and more recently Atomic magazine, Ashton has been a tech journo for over 12 years, including five years with APC.



Aluminum-alloy base

PG191

Indeed a Monitor Made for Gamers

Packs 2ms Response Time,
Powerful Bass Performance and
Video Communications into 1 Display



Subwoofer box, 3 USB2.0
ports, microphone and
earphone jacks, and
SRS hotkey built-in

I recently had the pleasure to play around with the new ASUS PG191 LCD monitor, which the company is marketing as a display tailored for the gaming community. I spent some time with it, and found several reasons why I think the PG191 is as good as advertised.

Jazz up your gaming system

Many avid players like to personalise their computers with light effects and stickers that match the games they are playing, and hence, the PG191 included themes of different game types into its designs.

- Aluminum alloy neck that looks like a robotic arm. It has a Star Wars feel to it.
- Diamond-cut aluminum alloy base
- Monitor contour and glared panel frame are based on designs of stealth bomber
- Subwoofer box at back takes on the shape of a tank canon
- The stylish cover of subwoofer box looks like the alloy wheel of a race car.

Heart-thumpin' bass

Sound plays a big part in the whole gaming experience as well. The PG191 incorporated 2.1-channel audio, 10W satellite stereo speakers and the 15W ASUS Power Bass System, offering high-quality audio comparable to the best LCD TVs.

The monitor further adopted SRS TruSurround XT Technology to support DolbyTM and the latest game titles 5.1 and 6.1-channel sound standard. No more tangling cables and extra cost for additional speakers to blast music and game sound effects.

Hotkeys Quickly Activate Special Modes

The PG191 offers hotkeys to activate its special audio and video modes. Select the right modes to optimise your listening and visual experiences.

- Hotkey for 5 Sound Preset Mode Selections (Fighting Game, Strategic Game, Theatre, Music, Standard)
- Hotkey for 5 Video Preset Mode Selections (Game, Night View, Theatre, Scenery and Standard)
- Hotkey for activating and deactivating SRS TruSurround XT

Smooth and sharp images

TraceFree, an exclusive technology found only on ASUS monitors, accelerates gray-to-gray response time to 2ms. By getting rid of ghosting and tracers during games and movies, the PG191 provides smoother and clearer images. Another ASUS-developed feature is SplendidTM Video Intelligence Technology. It intelligently detects activation of graphics applications and dynamically fine tunes image colour, brightness, sharpness and contrast for visual conditions most comfortable to the human eye. SplendidTM further offers five special modes (Standard, Game, Theatre, Scenery and Night) that can be activated by a hotkey for different video usages.

Interactive gaming right out of the box

With the 1.3M-pixel built-in webcam and headphone and microphone jacks, the PG191 is a video conference center right out of the box. For online games that require teamwork and team strategies, the ASUS monitor is an ideal solution. The whole team no longer needs to get together at an Internet cafe to play games such as Counter Strike and Battle Field. Just turn on the webcam and plug in the headset and microphone, and you're ready to see and chat with teammates while gaming at the comfort of your home.

With great video and audio quality, interactive gaming capability built in and cool designs to give your system a new twist, the PG191 is indeed made for gamers.



With friends like these...

Techies aren't always helpful angels. In fact, they can be downright cruel. Maybe that's because end users keep sending them over the brink.

Karl Hartmann from Chifley in the ACT was working in the IT department of a multinational company when he noticed a co-worker having a problem. "My colleague, let's call him Helpdesk Boy, was actually a really nice bloke. He meant well, but was a little slow on the uptake on occasions. Anyway, Helpdesk Boy inherited a relatively new desktop from another guy who left the company. Rather than rebuilding the system, he jumped straight into work using what was left on the box. Soon he was experiencing a mysterious shutdown problem. This went on for weeks if not months. Eventually he replaced not just the motherboard, but also the power supply unit, the RAM and even the hard disk."

Hartmann knew what the problem was, and so did some of his mates, but they didn't let on. "What amazed us was not only that Helpdesk Boy was not catching onto what was going on (keeping in mind that his machine would not simply lose power, but actually run through a full shutdown) but that the PC supplier would happily continue to send out components for this troublesome machine

which technically had nothing wrong with it.

"Eventually it was just too much and we told Helpdesk Boy to remove all the extra accounts out of the local administrators group (by this stage there were a few there). After that — his machine mysteriously stopped shutting down at the same time each day. He then caught on to what most of us had figured out pretty quickly —

overwhelmed by stupid requests). "The best remedy is to harness all this stupidity and throw it back at them — after all, laughter is the best medicine," he says, pointing to his top three pranks:

1. "Replace the desktop background with a screenshot of their existing desktop. Turn Auto Hide on on the Task Bar. Now watch the user spend stupendous amounts of time trying to double-

3. "My absolute, all-time favourite: the power of Virtual Network Computing (VNC). If you are a big fan of VNC, then it's time you tell the end user that the cubicle they're sitting in is haunted. I know it's not very nice, but once the pointer starts moving by itself and 'REDRUM' is slowly typed across the screen in front of them, you will not be able to stop laughing at the user's reaction."



SOME OF THE OTHER GUYS IN I.T. THOUGHT IT WOULD BE FUNNY TO SEND A REMOTE SHUTDOWN COMMAND TO HIS MACHINE

that some of the other guys in IT thought it would be funny to send a remote shutdown command to his machine.

"By the end of the joke, there were about five of us having our fun with him. I don't know what was funnier though, the sight of Helpdesk Boy throwing things at his machine as it happily began to shut down, or the fact that the hardware supplier eventually provided us with a brand-new machine, three years after we bought it the first time round."

PRANKS A LOT

Still on bad boys, Jeremy Vista (no relation) from Arndell Park in NSW says that he plays pranks on users to keep his sanity (when regularly

click on an icon on their desktop (trust me, they will not give up). The cherry on top with this prank is to be sure to open their browser to an obscene web site prior to taking a screenshot."

2. "I have two accountants that requested a cordless mouse and keyboard each, and after weeks of whining and complaining I have finally given up and purchased them. Just to make it interesting, I installed the cordless mouse and keyboard on their PCs and swapped the mouse and keyboard after installation. The two users did not know what was going on, complaining their mouse pointer was moving by itself and not going where it was supposed to go — this prank made my week."

YESH BOSH

Techies can be cruel. They can also be drunk — as reader Scott Thompson was — late one night when his boss called. But techies always deliver. Thompson recalls he'd gone to his birthday party one Wednesday night. "I had got home after work to find my family and friends waiting for dinner. We had dinner and drank quite a lot of alcohol. At about ten, I got a call from an irate general manager once everyone in the IT department had left. He needed files off his home PC and explained over the phone that his 13-year-old nephew had managed to disconnect his work laptop from the corporate domain and had attempted to add it to the local domain to retrieve these files.



EndUser

from
The readers of APC

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.



What the hell do you mean I have to plug my wireless modem into my PC?!?!?

Faraji: It's not wireless? Does the modem have an antenna?

Customer: Well, yes, but you have to plug it in.

Faraji: Sir, the modem is wireless — it just connects to the computer through a USB cable.

Customer: Well then, it's not wireless, is it?

It was at this stage that the customer insisted on speaking to a supervisor. Faraji, showing exemplary patience, still managed to have a good laugh. "God bless the end user!" he says.

I TOLD YOU SO

Gregory Ede from Canberra recalls a large government department that outsourced its IT infrastructure a few years back. "Soon after the knowledgeable in-house people had been shown the door, the outsourcer's IT help desk was called and informed that 'I need to perform a database unload.' The genius representing the global outsourcing company asked 'Which car park are you in?'" "Nuff said.

HISTORICAL CORNER

If you think some end users are dumb now, nothing compares to the early days of computing. Greg Covar of Dee Why in NSW recalls his backup procedure in the '90s: "At the time, I used 3.5in floppy discs to back up my data, and it took three discs to achieve this. I thought I would teach my receptionist to back up for me to save myself some time, so I said, quite lucidly I thought, 'Place the first disc in the drive and start the backup program. When the screen asks for the second disc, put it in the computer; do the same when it asks for the third disc and keep going until the backup is finished.'" Later that day I got a call from my distraught receptionist to say that the disc drive must be broken, as she couldn't get the second disc into the drive. It turned out that I hadn't told her that she had to take the first disc out before she could put the second one in!" ☹️



If the second backup disc won't fit, I've no idea how the third one will!

MISLEADING AND DECEPTIVE CONDUCT

The award for patience in the face of stupidity goes to Jamil Faraji, who was working in a call centre providing technical support for wireless internet customers.

One of the wireless modems he was supporting connects to the PC via a USB cable — the same as most wireless modems.

Faraji says he got a call from an irate customer wanting assistance with a wireless connection.

Customer: I've been on the phone for an hour trying to get this sorted out.

Faraji: No problem, sir, I can help you there [big mistake]. What seems to be the problem?

Customer: You guys sold me a wireless modem. I brought it home, hooked it up and discovered it's not wireless at all.

Being quite intoxicated, I explained in my best professional voice that it was probably not a good idea and could he bring the machine to me in the morning so I could fix it. He then explained that he would be on a plane to China in just over an hour and wanted to have this machine functional by then. As this was the general manager, telling him I couldn't do anything would have been a very career-limiting statement to make, so I gave it a shot.

"We attempted to connect via his wireless/VPN and that failed, via Ethernet/VPN and that failed too. Dialup finally allowed him to connect, but VPN failed over and over. Eventually I got his machine reconnected to the domain after a lot of try-this, try-that stuff. Not too bad for a drunk boy on a remote link, eh?" Now that's what we call going beyond the call of duty.

WINNERS!

This month's published readers win a Microsoft Wireless Laser Mouse 6000 worth \$129.95. Made for desktop PCs, it features Microsoft's high-definition laser technology with ultimate precision and smoother tracking and responsiveness (even on unique surfaces). This mouse includes a new magnifier tool and a tilt wheel, making navigating, viewing and editing easier. The Microsoft Wireless Laser Mouse 6000 delivers comfort and superior control to the desktop in a high-end style that will turn heads.



SEND US YOUR CONTRIBUTION AND WIN A PRIZE!

Send in your tales of woe involving dumb end users or incompetent techies to apcenduser@acpmagazines.com.au and if we print it, you'll win a prize. You must supply contact details in order for us to verify your contribution.



Watchdog

eyes on vendors



10 things I hate about O2

10 weeks. That's how long Peter Henderson was kept on hold by O2 customer service — before Watchdog investigated...

Earlier this year, I decided to finally ditch my PDA in favour of a device that could act as both PDA and mobile phone in the one unit. After some research I purchased a brand-new O2 Xphone 11m. On first use, it was apparent that the device had a software problem — the start menu wouldn't load and, as such, I couldn't access the vast majority of the Xphone 11m's functions.

I called the O2 Technical Support line and they confirmed that the device was faulty. They told me that as the device was brand-new and dead on arrival, it was eligible for an immediate replacement and I should send it to their service centre in Queensland (Mobile Phone Solutions). I now regret following this advice. It has been more than ten weeks since I sent the phone away and I don't think I'm any closer to receiving a replacement. After two weeks I'd heard nothing, so I called the service centre to check on the status of the exchange. I was told they had yet to examine the phone — hardly the response required for an "immediate" replacement!

I called again two weeks later and was told that the exchange had been "approved", but they were waiting on a replacement handset from O2. Since then, I have called O2 and Mobile Phone Solutions on five occasions and each time they have

promised to call back, yet this hasn't happened even once. With each call I was advised that they were waiting on replacement stock and would call me later that day to confirm an estimated time frame. With my last call to O2 I declared that I either wanted my phone or a refund (so that I could purchase a new device).

Alas, unsurprisingly, the promised return call never came. This level of service is incredibly disappointing and it leaves me without a phone or PDA more than 10 weeks after purchase. It also makes me wonder: what good is the warranty when they can't fix a software problem or locate a replacement handset?

**Peter Henderson
Turner, ACT**

Watchdog contacted O2 to find out what the score was with Peter's Xphone 11m and invited the company to resolve the issue. Specifically, where was his replacement — and why had he experienced such delays and difficulties in getting a response from the company? O2 responded with the following:

Dear Watchdog,

O2 would like to apologise to Peter Henderson for the problems he has experienced. We have contacted Peter to offer him a replacement unit and spare battery to replace the O2 Xphone 11m and he has accepted our offer.

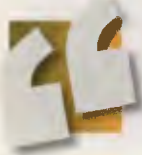
O2 is committed to resolving any concerns our customers raise in a satisfactory manner. To meet the needs of our growing customer base, we have expanded our customer service team who are responsible for delivering after-sales service and support to our customers. We appreciate feedback from our customers as this will help us improve our service to them.

**John Featherstone
Vice-President of Sales
for South East Asia
and Oceania,
O2**

Watchdog got in touch with Peter to confirm his replacement arrangements with O2. He told us that he was indeed offered a replacement unit from Singapore, but the only new model available to him was the

Xphone 11, not the 11m (the model he'd purchased, with its updated media buttons and appearance), as it was out of production. Peter was initially unsure as to whether to accept the 11 model in place of the 11m and commented, "It makes me question what good the warranty is, as it does not appear that O2 are able to support the product." He added that as a form of compensation for the delay, O2 had offered him a spare battery.

Eventually, on advice from a customer service representative that a refund might be possible but the process would be lengthy, Peter decided to put the delay behind him and agreed to accept an Xphone 11, but was still left with a bitter taste in his mouth: "I jumped up and down for 10 weeks and didn't get anywhere. It was only when the media got involved that they attempted to resolve the issue: hardly proactive in my book. I suspect that I would have been waiting a very long time without your help."



I JUMPED UP AND DOWN FOR 10 WEEKS AND DIDN'T GET ANYWHERE UNTIL THE MEDIA GOT INVOLVED: HARDLY PROACTIVE IN MY BOOK

THIRD TIME'S THE CHARM

David Hanney of Townsville, Queensland, wrote in to Watchdog after experiencing a series of battery-related problems with his Canon S1 IS digital camera.

Earlier this year, the 13-month-old unit started indicating that brand-new and freshly charged batteries were flat. David ended up sending the camera back to Canon *three times* to get it fixed (his shipment expenses totalling almost \$190). Each time it was returned, he found the fault had not been corrected.

Upon its second non-repair, David declared, "Now I was cranky. I sent the camera back with a letter explaining I was most upset and that my future electronics purchases hinged upon Canon's response this time round." Canon phoned David and explained that the unit couldn't be repaired and they would send him out a replacement — a new S3 IS model.

Watchdog contacted Canon to ask about the problems with David's camera

and why the repair team required three attempts to correctly diagnose the issue. Chris Kearney, product manager for digital still cameras and scanners, told us: "Canon endeavours to provide the optimum level of customer support and services for all products. However, when a fault is intermittent, it can be difficult to replicate in a service centre and on rare occurrences a situation such as that experienced by Mr Hanney may occur."

"The problem with this PowerShot S1 IS was an isolated incident. Canon has stringent quality assurance guidelines to meet the high standards that our customers expect and sincerely apologises for the inconvenience to Mr Hanney."

Watchdog got in touch with David to verify he had received his replacement.



Flat as a pancake: one reader's happy snaps were interrupted three times in a row...

He told us the new camera was working fine: "Needless to say, I am extremely happy with the outcome. I'm a little unhappy it took this many returns to resolve the problem, but my faith has

returned in Canon and my future choices will not include a black ban on Canon products. Let your readers know that Canon will resolve customer service issues. Finally a good story."

INSTALLATION ART

I was reading Watchdog's investigation into the matter about no Windows OS CDs being included with the sale of HP laptops (APC September, page 30). I have a similar problem in that my laptop, which is only two months old, needs to have its OS reinstalled (there are issues via the system registry that have made the whole system unstable).

HP has not responded to any of my numerous emails, and I was wondering if you would be able to speed things along on my behalf? HP has a lot of other software bundled on my laptop, so I suppose I would be requiring those CDs as well to keep my warranty intact? Otherwise I'm happy not to load HP stuff unnecessarily onto my laptop — but if I have to, I will.

I have not had any assistance whatsoever and am thoroughly disappointed. Thank you so much for any help you can give me.

Savva Emanon
Haberfield, NSW

Watchdog got in touch with HP and invited it to look into the issues involved with Savva's laptop. Here's what public relations manager Brad Swiney had to say:

Dear Watchdog,

Thank you for the opportunity to respond to Savva's concern regarding Windows OS CDs not being included in her HP consumer notebook. The HP support team are making contact with Savva directly to resolve her specific issue.

HP consumer notebook and desktop computers ship with an OEM version of the Microsoft operating system pre-loaded. This provides customers with an easy installation experience, avoids the frustrations of losing CDs and can lower the purchase cost. The OS software is licensed for use on the machine it ships with and is stored on a hidden partition of the hard drive. If the system were to crash, the computer can be reset to its factory condition without the need for CDs.

Customers have the option of creating their own recovery CD if they wish; however, this CD resets the machine to its factory condition. Customers should also consider using the System Restore program, a part of Windows XP which restores the unit to a previous point in time.

HP recommends that customers perform regular backups of their critical data at all times. Customers who require an independent version of an operating system should check the details of the machine prior to purchase or should consider purchasing the software separately to the hardware.

For HP support, customers can call 13 10 47, or can find online support at www.hp.com/go/support.

Brad Swiney
Public Relations Manager
HP Australia



Are your OS CDs missing, or were they never there in the first place?

watchdog@acpmagazines.com.au

Has an IT vendor or telco stuffed you around? Let us know about it and we will chase them for a solution on your behalf. Letters sent to watchdog@acpmagazines.com.au must include the writer's full name, suburb, state and phone number to be considered for print publication. Please also include details such as invoice numbers and people you've spoken to. Phone details will not be published. All correspondence becomes the property of APC and is subject to editing.



Opinions

have your say!

TODAY THE DESKTOP, TOMORROW THE WORLD!

I was outraged to read Mark Cavanough's letter in APC October (page 28). Mark is right to say that Microsoft does back its products, but there is more than enough community support on the net for all Linux distributions — and the recently released Ubuntu 6.0.6 LTS with three years support, in my

view, has been the best commercial support of any Linux distribution ever released. Mark also claims that unless Linux begins to evolve, it will remain as bloatware. Mark, I think you have your OSs confused. Windows is the bloatware. Microsoft has a habit of releasing an OS with 70 per cent of features that nobody ever uses. Microsofts plan to release Windows Vista with (guess what) even more

features. Linux has done it the way it should be done: bundling only essential applications and features (and making the rest available for download only if you need them). That my friend, is not bloatware. Mark, please do your research on Linux a little more before making false accusations about an OS that's simply trying to do good for the user (instead of lining the pockets of those hoping for world domination with wads of gold). Or — dare I say, *planning* world domination.

Chris Jones
Southport, Qld

the now-deceased salesman that the order was ready for delivery (and waiting on confirmation of payment). We wonder how many other Dell customers have gone through the same problem?

Gary Bywater
Cessnock, NSW

SHAPE UP OR SHIP OUT

I am not impressed at all with Austen Evans and his issue with Chilli Internet Solutions (APC October, page 26). He paid for 200MB, yet he used five times that amount. If every user did the same, a lot of ISPs would fall by the wayside. As a frequent downloader, some months I use 20GB (and that's what I have paid for). If Austen Evans needs a 1GB plan, he should pay for it and likewise for any other download limits. Personally, I think he should count his lucky stars that he wasn't immediately disconnected from the service.

Daniel Clarkson,
Edens Landing, Qld

DEAD ON NON-ARRIVAL

We recently ordered a Dell computer online for our small, community-based organisation. After a fortnight, our IT person checked with Dell and the delivery was still seven to 10 days away. After another fortnight, it was *still* seven to 10 days away. We rang a third time and were told that some time during the morning of our purchase, our salesman had come down with Blackwater fever and died that evening; his workstation was covered by a Hazmat sheet and everything on it was taken and burnt, including our order details. Apparently the system kept emailing

FREE TO GOOD HOME?

I have advocated that the company I work for adopt Google Desktop Enterprise Edition (to assist users to locate locally stored data), but the licence agreement features a

"Today's weather: cool and windy. Expect a late change when the world is grasped by a power-hungry corporation..."



letter of the month

THE SIGN READS: "NO PHISHING"

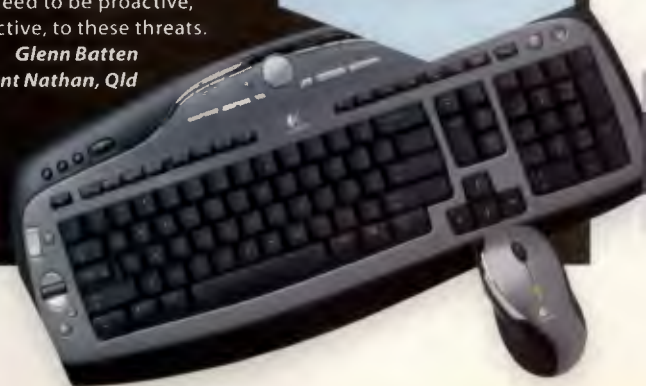
Why are the banks not doing more to protect their clients and stamp out phishing attacks? Most phishing web sites eventually redirect you to the real bank sites after they con you out of providing your login and passwords (to give you a false sense of security). It wouldn't take a genius to check the referrer URL against known phishing web sites and any address containing keywords such as the bank's name. If it

detected a suspicious URL, it could provide an immediate warning to the consumer that this may have been forwarded from a fake phishing site. As an example, let's say there's an ABC Bank and phishing sites which aim to take advantage of ABC's customers. The phishing site might contain the term "abc.com" so as to fool visitors. If ABC scanned referrer URLs for the term "abc.com" (not being one of ABC's own web sites), it could warn the user (just seconds after the breach occurs). If a client is

referred from one of these sites, the bank should now have an exact record of who might be compromised. They should be contacting these customers and warning them of the risks. The banks need to be proactive, not reactive, to these threats.

Glenn Batten
Mount Nathan, Qld

Glenn wins this Issue's Letter of the Month prize, a Logitech MX3000 cordless laser mouse and keyboard set valued at \$179.95.



What a rip-off:
Allen from Victoria was
unimpressed with APC's
LP Recorder offer. . .



commercial usage statement which provides that Google Desktop Search is for non-commercial use only and if you want to make commercial use of it, you must enter into an agreement with Google or obtain Google's written permission in advance. I was mildly surprised as it is strongly plugged as a free tool. I tried to find out how to comply with this by obtaining a licence for SOE testing purposes (and to evaluate what it would cost for our department to implement). The only thing I could find was "free" written every where. The only links I could find were online fault reporting and advertising forms. What can I do? Are there any other tools available that can replicate Desktop Search's function?

Tyron Thomson
Browns Plains, Qld

SPEED DEMON

I applaud your experimentation in the pursuit of ultimate PC speed. Perhaps the reason your machine would not boot is that the cooling of the GPUs was not enough. Sure, the ETOH was cold, but would those GPU fans be pumping any past the bits that needed cooling? I should think that the other problem would be boiling (by the looks of the photo), and if the hot bits are surrounded by ETOH vapour rather than chilly fluid then the heat transfer would be awful. Can you try again with a liquid with a higher boiling point? Hey, I happen to be a physicist — can I come help?

Scott Martin
Killarney Heights, NSW

HAVE YOU SEEN MY JACKET?

I originally clad my Toshiba P20 laptop in leather two years ago.

I wonder if Asus' model was inspired by mine? (See <http://snipurl.com/xhew>). The best thing about a leather covering is the laptop is very resistant to scratches and marks, so it's great for the frequent flyer who's always pulling it out to go thru X-ray machines etc. And it gets some good comments too!

Steve Alexander
Toowoomba, Qld

YOU LITTLE RIPPER (NOT)

I spotted your September issue in the newsagent the other day and purchased it because of the offer of a full version of LP Recorder 6.0 on the companion DVD. With a million LPs, I've been looking for ages for a program to allow me to burn them to CD. Can you imagine my disappointment when I discovered that one of the most important features of such a program was not included? I speak, of course, about dividing the LP recording into separate tracks. To do that, one has to purchase the LP Ripper program at a cost of \$54.95 (plus \$15 for the install CD). It's back to the drawing board for me — I can assure you I have no intention of parting with my hard-earned, particularly for this sneaky attempt to suck people into buying the LP Ripper program.

Allen Biggins
Barongaroo, Vic

PATCHWORK

I've been getting APC home-delivered since 1996 and often help friends and family set up their

computers with

Windows XP.

A friend in the computer support industry told me about AutoPatcher,

which is available from www.autopatcher.com.

I found this to be really good; you just reformat a machine, then apply AutoPatcher to update the computer. It doesn't matter if you don't have the fastest internet in the world — all the patches are installed and only one reboot is needed to apply all the updates. I hope this helps out your reader, Phillip (APC October, page 28), as APC's helped me time and time again over the years. Maybe you could do a Workshop on this?

Mark Evans
Bathurst, NSW

WHEN UNLIMITED IS NOT

I do a lot of free repairs for people who cannot afford IT support. One of the most common areas of confusion with broadband is how small a limit of 200MB downloaded data a month is (particularly when companies tell you how great 200MB is). On a modem connection, it is possible to download a maximum amount of approximately 25MB every hour. So, a limit of 200MB could be consumed in eight hours (especially with all the new bandwidth-intensive forms of entertainment out there). People need to understand this. It would certainly take the wind out of some of the more confusing sales pitches from some companies.

Mozz O'Sullivan
Erskineville, NSW

apc

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This month in Labs. . . Just how many cores?

It's the end of another year of power computing with APC, so it's time to look back at 2006 and see what we can be grateful for. Two thousand and six has definitely been a year of change.

AMD spent its time consolidating this year, not switching to any new process or

microarchitecture; it stuck hard with its winning Athlon game and did very well. There were some changes in the camp though, so AMD wasn't resting on its laurels. The introduction of the AM2 socket and DDR2 memory support hasn't gone astray and you can now find AMD's chips in Dell PCs (something we never thought would happen).

Intel had a big year. It finally scrapped the Netburst architecture for a svelte, new core, the Core 2. In love with its new toy, the Core 2 is now found in desktops, notebooks and servers all over — and with good cause, as it's a little ripper.

Nvidia went from bigger to better, with the 7950GX2 — two chips on one card. This brought us the concept of a quad-GPU system (with the price tag and power consumption to match). It's a great idea, but did anyone actually buy them? ATI finally got CrossFire working and with great results. A pair of X1800 XT's held the 3DMark top of the mountain for a veritable age (almost three months), and the X1900 series just got better.

And now, 2006 can definitely be called the year of the multicore, thanks to Intel and AMD's forays in this territory. Though AMD has had its X2 chips on the market for

what seems like forever, Intel brought its "A" game to tear back some market share. The Core 2 Duo became the Core 2 Quad and AMD now has come catching up to do.

So, 2006 for the PC component superpowers was busy — but here's where it really begins. My prediction for 2007 is this (and it's also a bit of a warning): PCs are going to once more get hotter, louder and hungrier. If you want to be on the cutting edge, then expect big power supplies, big fans and heaps of heat to move. That stock cooler just isn't going to cut [read: chill] it any more. **APC**

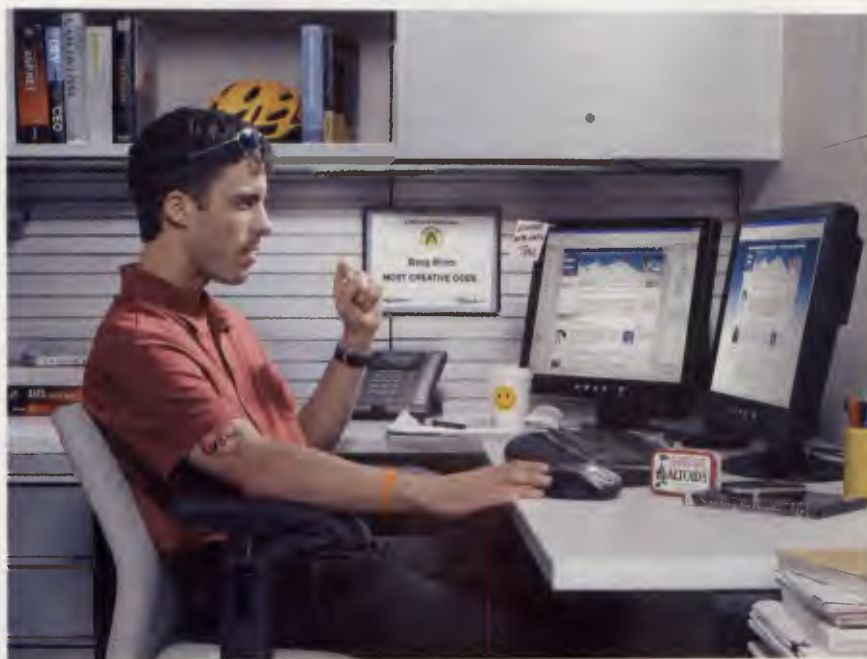
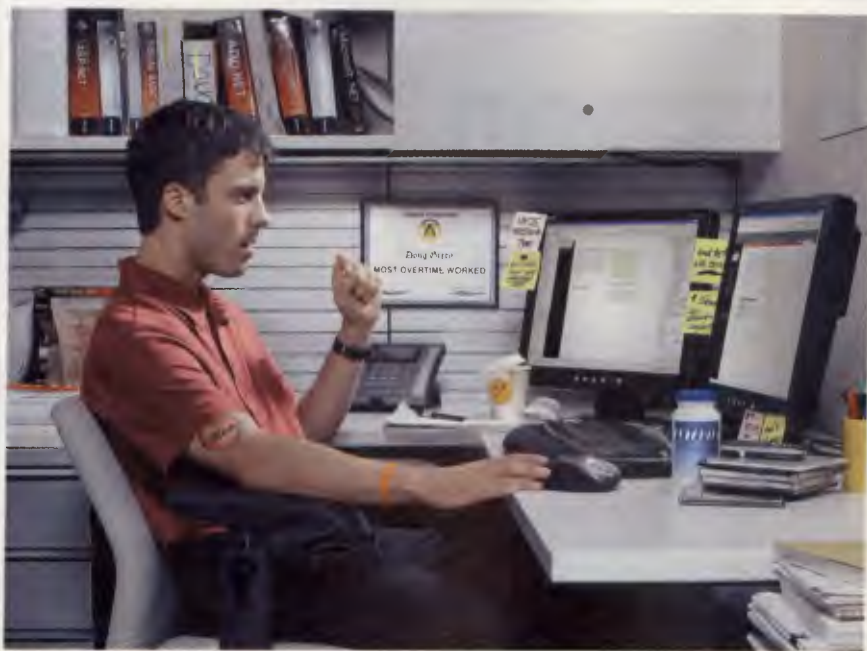


NICK RACE — TECHNICAL EDITOR



2006 FOR THE PC COMPONENT SUPERPOWERS WAS BUSY — BUT HERE'S WHERE IT REALLY BEGINS

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FIRST TEST

Intel QX6700 quad-core CPU

Are four heads better than two?
Nick Race takes a look at Intel's first quad-core chip.

It's been only four months since the commercial release of Intel's Core 2 microarchitecture, the successor to the Pentium's NetBurst design. Intel claims to have sold over five million chips for desktops, notebooks, workstations and servers, so it's been a success — at least commercially.

The one-upmanship in the CPU market continues, however. Twelve months ago, we'd be playing a game of "who's got the most clock cycles?" or 32- or 64-bit thumb wrestling, but today it's a different story. Now it's all about the cores.

Upon the release of the Core 2 Duo processor, Intel's main competitor AMD fired another paper volley and announced its new high-end platform: the 4x4. The 4x4 system is basically dual-processor, dual-core computing — running two dual-core chips on one motherboard. There is little information available at time of writing about AMD's new platform (except product numbers FX-70, FX-72 and FX-74 are assumed).

So AMD's tack to getting four cores in one box is a little behind at this stage, but expect to see proper quad-core AMD CPUs in 2007.

THE HEART OF THE MATTER

Intel got the jump over AMD in the battle of the ongoing CPU war. Announced at IDF Fall 2006, the Intel Core 2 Quad QX6700 Extreme Edition is the first x86 quad-core chip. The QX6700 (codenamed Kentsfield) will be released as a premium part, with a quad-core family being released in Q1 2007 at more manageable price points. The QX6700 runs on a 1,066MHz frontside bus, with 4x 2MB of cache (of which 4MB can be shared between two pairs of cores). It runs at 2.66GHz, the same clock speed as the Core 2 Duo 6700. It has a thermal design profile of 130 watts — twice that of the dual-core part.

The QX6700 consists of two Core 2 Duos on one die. It's not a true quad-core, in the same way the Pentium D is not a true dual-core — the two pairs of cores can only

communicate via the frontside bus. Now, we've dealt with this method of CPU design before (with the Pentium D), and testing shows it isn't as good as a truly integrated model (a fact that surely doesn't escape the engineers at Intel). So why was it done this way? The answer straight from the horse's mouth: it's cheaper. According to Intel, integrating the existing product into a new package is a much shorter turnaround than redesigning from the ground up.

ON THE BENCH

We tested the QX6700 against the dual-core E6700 (running at the same clock speed for an accurate representation of the advantages of adding more cores into the mix).

Our test bench consisted of an Intel BadAxe2 D975XBX2 motherboard with 1GB of DDR2 533MHz Micron-manufactured RAM and a single ATI X1950 XTX graphics adaptor, with 512MB of RAM running at stock speeds. Windows XP Pro SP2 was installed

on a Western Digital Raptor 10,000rpm SATA hard disk drive, all powered by a 750 watt Silverstone PSU. Intel's stock cooler was used on both CPUs. As both chips use the same platform, no driver or hardware changes were required for the tests.

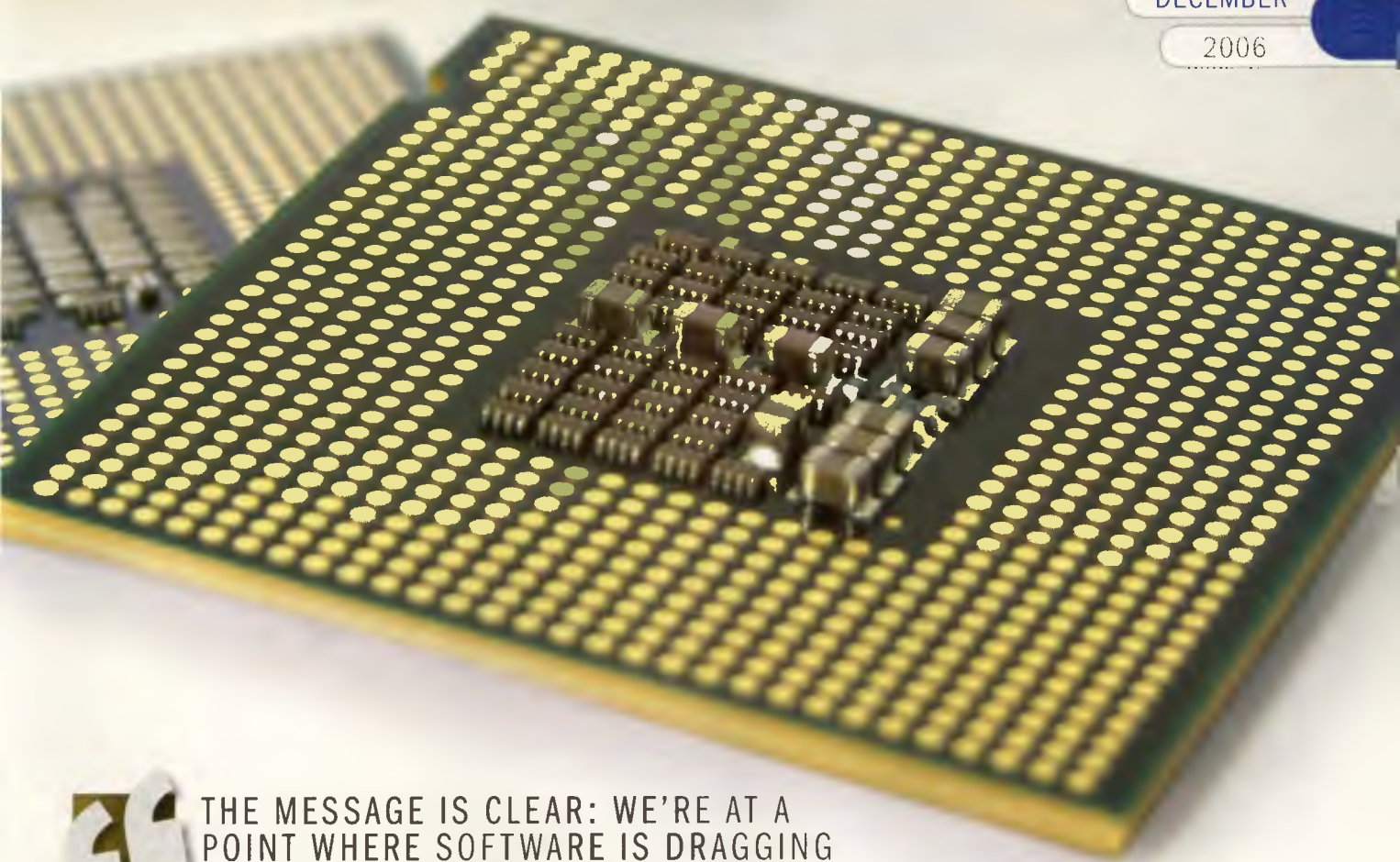
Due to the single-threaded nature of most applications, there's no discernible advantage going from two to four cores — and thus very little change in benchmarking results that cannot be accounted for by margins of error. Our first benchmarked result showed this off to a tee.

PCMark05 from Futuremark showed a slight increase in performance from two to four cores, thanks to a small segment of the benchmark where single-threaded tasks are run concurrently. The QX6700 earned a respectable 7,550 to the E6700's 7,245.

Next we jumped over to Cinebench, a rendering application which is perfect for showing the speed-up when moving from one to multiple cores. We ran Cinebench in a single-CPU mode, getting a base score of 459 from the E6700. Running the test with both cores of the dual-core chip gave us 831, then adding the QX6700 into the mix showed a further increase to 1,446. This shows us nicely that in multi-threaded, highly organised data sets, the QX6700 can scale reasonably well.

We backed up the Cinebench test with a benchmark from POV-Ray. Working closely with Intel, the latest version is fully multi-

BENCHMARK TESTS	QUAD — QX6700	DUAL — E6700	SINGLE-CORE
WMV HD Encode "Kitesurfing" — minutes	11:59	12:12	N/A
POV-Ray — pixels per second	2600	1160	653
Cinebench	1446	831	459
PCMark05 — default settings	7550	7245	N/A
3DMark06 — default settings	6992	6498	N/A
DVDShrink — Alien 3 full-length	4:15	5:00	N/A
TMPGenc — Hdwatermelon 10 sec clip	0:41	1:01	N/A
Premier 2.0 HD — encode 10 sec clip	1:00	1:38	N/A
Photoshop CS2	2:33	2:54	N/A
Quake 4 — fps	151.2	149.9	N/A



THE MESSAGE IS CLEAR: WE'RE AT A POINT WHERE SOFTWARE IS DRAGGING BEHIND HARDWARE ONCE AGAIN

threaded, allowing speed-ups from multiple CPU or core systems. Scores followed the same curve as the Cinebench tests did; a single core rendered 653 pixels per second, dual-core 1,160 and the QX6700 at full tilt could render 2,600 pixels per second.

Switching to more practical testing returned us some more interesting results. After tracking down a number of applications which offered true multi-threaded opportunities, we were able to differentiate between the two chips. DVD Shrink is an application commonly used to re-encode DVD video onto 4.7GB disks. After copying the DVD to the hard disk, we were able to remove the limiting speed of the optical drive from the equation and rely

on the CPU for a more accurate score. Our dual-core rig managed to downscale the full-length DVD in five minutes on the dot, while the quad-core finished the same job in four minutes, 15 seconds.

A standard, automated workload in Adobe Photoshop CS2 also showed us some good results. The task set runs a number of high-resolution images through some filters and transforms (plus other functions), then resizes the images for a web gallery. The QX6700 finished the task in two minutes, 33 seconds, while the dual-core E6700 wasn't too far behind with a time of two minutes, 54 seconds.

As you can see, there isn't a straight correlation between the number of cores in a CPU and its

performance — even in applications optimised for working with multiple threads. What it does show is that there is a clear benefit to be had, but only for a certain subsection of applications — mostly multimedia-related where there are large amounts of highly intensive floating point calculations taking place.

BRASS TACKS

So is it worth more than a thousand dollars for the new Intel Core 2 Quad QX6700? Maybe — if you're heavily into video editing and multimedia, you can justify the expense — but for most users the difference you'll see on a day-to-day basis will be minimal at best.

After so much effort put in by Intel to lower the heat output of its

CPUs (after the farce that was the TPD for high-end AMD and Pentium processors at the end of the last generation), it's a shame to see it go to waste again. It seems that, after a brief respite, we're going to be looking at 100+ watts for desktop CPUs all over again — and suffer the related heat issues and noise that goes along with cooling a supernova in your case.

That said, there are a lot of things to like about the quad-core. Firstly, it's an indication that CPU manufacturers aren't content to rest on their laurels after such a dramatic market shakeup. The message is clear: we're going to see more progression, so we're at a point where the software is dragging behind the hardware once again. [ETC](#)

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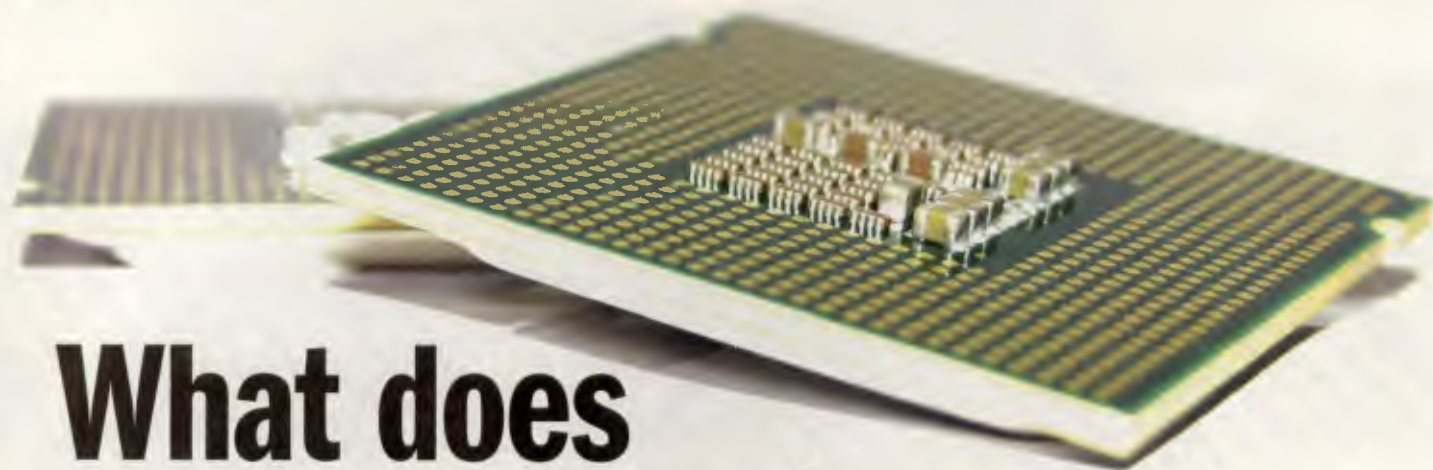
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What does multicore do for you?

Ashton Mills digs into the murky world of multicore.

It's so tempting, isn't it? As the old adage goes, two is better than one. And it's true, even when it comes to CPUs and cores (at least for the majority of applications). There's no denying the processing potential multicore CPUs offer, especially for heavy-workload programs. But it's about more than raw processing power; multicore CPUs offer the ability to truly multitask with dedicated resources and, in turn, provide a more responsive system even under heavy load.

That said, if you're thinking about making the multicore jump, it's important to go in eyes open because, like most technological leaps, it's not all black and white.

LOOK TO THE THREADS

Before looking at the benefit of multiple cores, we first need to look at threads — shorthand for *threads of execution*. By default, most applications today are single-threaded (technically, all processes contain at least one thread), largely because that's all they need to be. However, some applications, especially processor-intensive ones, naturally lend themselves to splitting up the workload into multiple threads of execution.

This has a range of benefits when it comes to multicore CPUs, not the least of which is the ability to run these threads across multiple cores (and thus achieve true concurrent

execution). If you remember your computer science classes, multiple processes running on a single CPU are *context switched* with a given *time slice* — each process getting its turn in the CPU spotlight and thus providing the illusion of multitasking. With multiple CPUs or cores, multiple threads can be executed in parallel and provide true multitasking, at least in theory.

In truth, each core is populated by time-sliced threads, as even the most basic system will still be running a variety of threads for the operating system and applications. Speaking of which, it's usually not up

to the program itself to ensure it's making the most of your system's processing power — that's the job of the operating system. Today's modern operating systems — and this includes Windows XP, Windows Vista and Linux — are able to distribute threads across cores and CPUs as required to dramatically increase the processing headroom of a machine (even if one core is maxed out, the other core can be free to run other processes and keep the system responsive).

More than this, operating systems themselves are multi-threaded, so all the tasks they need

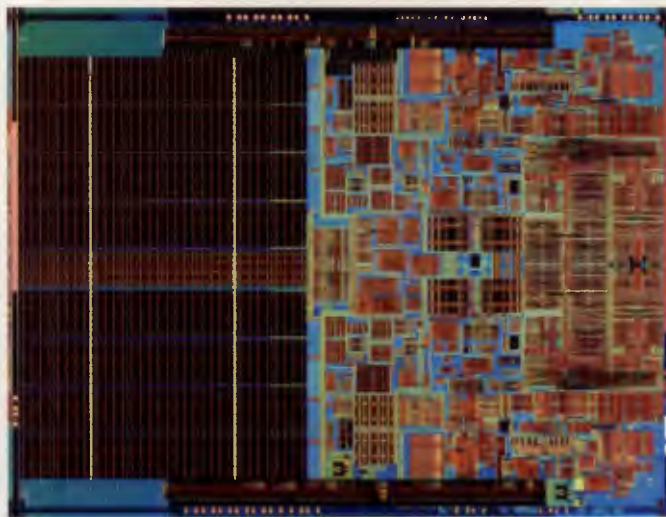
to perform — from network communication and background services, through to writing to disk or rendering to the screen — can be threaded and spread across available cores.

While it's possible for programs to set affinity for threads to a particular core — forcing separate threads to run on separate cores for example — it's actually not necessary. The operating system is aware of the load across cores and can allocate threads as needed to maximise the performance of a system. It's usually enough for developers to write multi-threaded applications and for the operating system to take care of the rest.

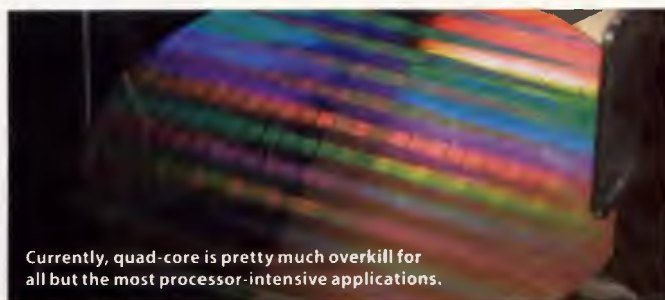
IS MORE ALWAYS BETTER?

While multi-threading sounds like a magic word, it's not all balloons and party pies. There are many apps that can benefit from multi-threading today, and many more to come, but it's not a golden rule that more threads equals better performance. In fact, depending on the application, using multiple threads can actually be slower, due to the overheads of thread management and execution across cores.

It all comes down to what the program needs to do. Applications that are by nature compute-heavy (and are able to break the compute tasks into multiple jobs) are the applications that benefit the most.



There's no denying the processing potential multicore CPUs can offer.



These include compression and decompression, encoding and decoding, maths- or physics-heavy functions and so on. You can see a trend here — anything that's going to stress your processor.

That said, even processor-friendly applications can benefit — not from increased processing potential, but from responsiveness. A multicore system allows you to compress a folder with ZIP while still using Outlook or listening to music (and to not notice any slowdown at all). The operating system will distribute the load to ensure the less-demanding threads aren't being drowned out by the heavy users.

When it comes to cores, Intel and AMD would have you believe that more is always better and, while jumping to a dual-core system certainly can provide for a faster and more responsive desktop system, quad-core is pretty much overkill for all but the most processor-intensive applications.

MULTI-THREADED APPLICATIONS

While the multicore revolution is still only relatively new, multi-

threaded applications aren't. Traditionally, server-based applications are multi-threaded to benefit from scalable CPU architectures (and have been for decades now), but even for the desktop you can find a plethora of multi-threaded applications which will stress your multiple cores.

Popular examples of multi-threaded applications include Photoshop and The GIMP (which are both able to fork threads for

nature, and while the perceived benefits have been small, the potential is enormous — we are only now entering the age of advanced physics in games and, when paired with complex AI, separate threads for physics and AI can split up and execute across multiple cores. DirectX 10, part of Windows Vista, already includes this functionality.

These examples are just the tip of the iceberg. For any

WHERE TO FROM HERE?

You'd think that the quad-core QX6700 would be more than enough for even the most demanding tasks, especially for your average desktop user. And, at least for now, it is — but, for both Intel and AMD, the multicore revolution has just begun.

In fact, according to Graham Tucker, technical manager for Intel Australia, the tenacious demand for processing power will be met



AS MULTICORES BECOME UBIQUITOUS, MANY MORE APPLICATIONS WILL BE PROGRAMMED WITH THREADING IN MIND

effects and image manipulation), CyberLink and InterVideo (for DVD decoding), DVD Shrink and x264 (for video encoding), RAR and 7-Zip (for compression) and even Microsoft Office.

Though thin on the ground at the moment, games are another area that will win big from multicore systems. Quake 4, Prey and the recently released Company of Heroes are three titles that promote their multi-threaded

applications where threading will provide a benefit, programs have generally already been written to use them. And naturally, both Intel and AMD are pushing for the continued development of more multi-threaded applications — and both companies provide developer resources to do so.

So, as multicores become ubiquitous, many more applications will be programmed with threading in mind.

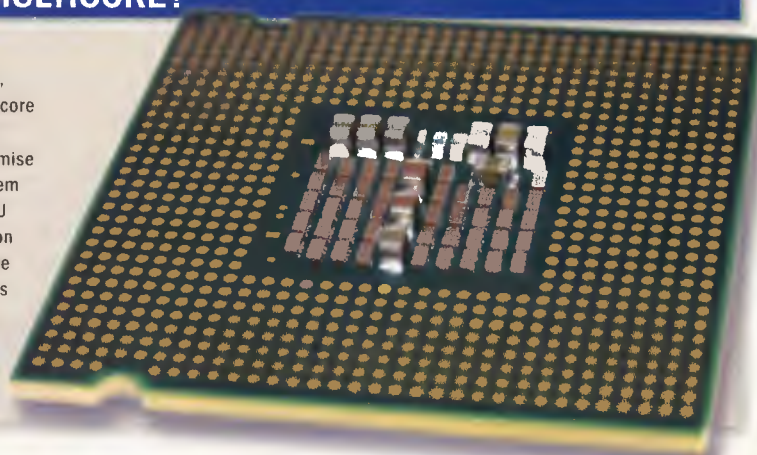
through cores in the future and not just megahertz, suggesting the "trend to improve on performance at [the] Moore's Law rate will be implemented by adding more cores." And, as the company showed off at IDF earlier this year with the world's first teraflop chip, an 80-core processor is possible here and now.

Maybe the sky is the limit — as for now, the silicon doesn't appear to be. [APC](#)

HOW IS SOFTWARE OPTIMISED FOR MULTICORE?

The big benefit of multicore CPUs is the parallel execution of threads, also known as *thread-level parallelism*. Fortunately, and for the most part, developers don't need to do much at all to optimise applications for multicore processors, aside from making them multi-threaded. As the keeper of the cores, it's up to the operating system to distribute threads and both maximise the performance of parallel execution threads as well as keeping the system responsive. And, in fact, while it is possible for an application to set a CPU affinity for a thread (ie. to make it run on a particular core), the application usually doesn't have the whole picture of the system's current resource use and requirements in the same way that the operating system does — so it's generally best to let the operating system do the work.

So, for the most part, it's enough for developers to make their applications multi-threaded and let the operating system take care of the rest.



Altech Mist PC

Big performance out of the box.

Altech put in a good showing in our recent high-performance PC Labs Challenge (APC October, page 50), when it submitted an AMD machine for gamers to drool over. This time, Altech's offering an equivalent and pricey Intel PC.

The Altech Mist is an air-cooled, Core 2 Duo Extreme Edition system with attitude. Its 2.99GHz Core 2 Duo processor is more than adequate for any game on the market. The Mist is built around the ASUS P5W DH Deluxe 975X motherboard, with 2GB of overclocker-friendly Corsair TwinX PC-8500 DDR2.

For storage, the Mist has four 250GB Seagate 7,200rpm SATA II drives with 16MB cache, which can be configured as is or in various RAID combinations, depending on your requirements. A Samsung 16x DVD-RW DL drive is included for optical media.

As a gaming machine, it needs some top-notch graphics capabilities. The Mist includes two MSI 7900GTX video cards, with 512MB RAM each, running in SLI. There's faster out there, but the MSI 7900GTX cards are a great choice to keep the price down a bit. Running the power-hungry cards and CPU is a Silverstone 750W PSU. The CPU is cooled with a Thermalright XP-120 cooler using a quiet 120mm fan. The system is housed in a functional but unattractive Antec PlusView II case.

Bundled with the Mist is a Razer Copperhead gaming mouse, with an eXactMat "gaming surface" mousepad with wrist rest. (But, there's no monitor or speakers included with this system).

The Altech Mist did pretty well with our standard benchmarks. Under PCMark05, the Mist managed

..: **CONTACT** Altech Computers
 ..: **PHONE** (02) 8831 9999
 ..: **ONLINE** www.altech.com.au
 ..: **MARKET** Performance enthusiast
 ..: **PRICE** \$5,799

✓ Top-of-the-Pops performance.

..: **VERDICT** ★★★★★

✗ Price tag.

a whopping 8,980 marks, besting Enspire — the leader of our high-performance PC Labs Challenge — which managed 8,574. The Mist was no slouch under 3DMark06 either. It scored a very respectable 10,498, beating the 9,254 earned by the Altech machine in the earlier Challenge.

So what have we got? The Altech Mist is the fastest machine ever sent to APC for review. To its credit, it's also reasonably quiet and outfitted well. Pairing it with a good quality 24in wide-screen LCD and a good set of speakers would make any gamer (and their credit card) weak at the knees.

Nick Race



Dell Dimension C521

Some said it would never happen: Dell's first AMD desktop.

Industry analysts once said Dell would never, under any circumstances, adopt AMD CPUs into its desktop or notebook PCs. They're eating their hats now, with Dell's recent, quiet announcement of the new Dimension C521 line.

APC managed to get a hold of the C521, which is a first for Dell Australia in two ways. The C521 uses an AMD 64 Athlon 3500+ single-core processor with 1GB of DDR RAM. The system is also kitted with a single 160GB Western Digital hard disk drive, a 16x DVD-RW DL burner and an X1300 Pro PCI Express graphics card.

All of this gear is shoehorned into the second "first" for Dell Australia, a small form factor

desktop. Though it's not as tight or fancy as a Shuttle, Mac Mini or other ultra-small system, the C521 is in a slight, slim case that saves plenty of room on the desk. But there's more strangeness under the hood. This Dell also represents the first AMD BTX-style design we've come across. Dell adopted the BTX standard when most of the industry had blatantly ignored it and, of course, all those solutions were for Intel machines.

Though the Dimension C521 is of interest because of these aspects, the machine hasn't really lived up to the hype. Considering the performance that can be had from top-of-the-line AMD parts, the Athlon 3500+ is really a budget

choice. It's cheap, but still has the performance that the Semprons (or Celerons) lack. Playing with the specs on the Dell web site shows an upgrade to the AMD X2 3800+ for an additional \$78 (and that's thoroughly recommended).

On the bench this small form factor beastie did just fine. A PCMark05 score of 3,145 is low, but considering the price point of this unit, it's nothing to sneeze at. The ATI X1300 card installed managed to squeeze out 1,305 in 3DMark06. The price includes a 19in LCD monitor, which does represent real value. Though the C521 is small in both size and raw performance, it is still perfectly suited as an all-rounder for the home. It's got enough grunt to perform most tasks well, just don't expect it to whip through multimedia or heavy gaming workloads.

Nick Race

..: **CONTACT** Dell
 ..: **PHONE** 1800 812 393
 ..: **ONLINE** www.dell.com.au
 ..: **MARKET** Everyone
 ..: **PRICE** \$1,267

✓ Small form factor; cheap as chips.

..: **VERDICT** ★★★★★

✗ An upgrade to dual-core would be best.

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** Note: Products were tested in an outdoor environment. Actual speed and distance will vary depending on interference, network traffic, building materials, and other conditions. Range and speed is determined using a Belkin N1 Wireless Router (F5D8731au4) and an N1 Wireless Notebook Card (F5D8011au) or N1 Wireless USB Adapter (F5D8051au)

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Gigabyte Aurora 570 & 3D Galaxy II

Watercooled PCs aren't just for geeks anymore.

Watercooling has always been expensive and complicated — and left to those with know-how.

We reviewed Gigabyte's 3D Galaxy kit a while back and were impressed. So, when the product was revised, we were curious to see what had changed. Watercooling requires suitable case selection so the kit will fit properly. To counter this, Gigabyte has refined its Aurora series of cases. Some of the new additions include better cable management, mounting brackets for the radiator and a clear side panel to show off your chemically chilled beast. A couple of aesthetic improvements and a slight size

increase have been made, but on the whole it's a refresh rather than a complete redesign.

The big change in the 3D Galaxy II kit is the inclusion of water splitters, allowing you to cool your CPU and GPU with a single kit. The waterblock has been tweaked with tiny copper fins directing water in and out of the CPU heatsink, while the reservoir is larger and adds a low-water-mark and temperature warning in case you spring a leak and don't realise.

Designed as an added extra for those wanting to go the whole hog, the Blue Eye VGA cooler replaces your existing GPU cooler. Fitting it is

a snap and brackets for most models of cards are included. It integrates easily with the 3D Galaxy II kit and can be upgraded later down the track as your needs change. Blue Eye works with both SLI and CrossFire systems, but not with Nvidia GX2 cards (because of their double-card design). A shame, given they're the cards enthusiasts are likely to own.

The complete watercooling kit for the masses, it's easy to install — and is perfect for the budding overclockers looking to learn the craft.

Dan Chiappini



CONTACT	Gigabyte
PHONE	N/A
ONLINE	www.gigabyte.com.tw
MARKET	Performance enthusiast
PRICE	Aurora, \$210; Galaxy, \$240

✓ Easy to install; whole-system cooling.

VERDICT ★★★★★

✗ No GX2 support.

Navman N40i

Take a picture that takes you back.

Navman's latest range of GPS in-car devices, the N series, takes up the NavPix image-based navigation theme introduced in the company's iCN 720 flagship machine — delivering it in a much smaller 200g package. The N40i we tested incorporates a 1.3 megapixel digital camera which geocodes its photos. Take a picture of a

landmark when you drive past it and the Navman will later direct you back there (or at least, from where you took the picture). It may seem like a gimmick, but it's one of the manifestations of the revolution that's embedding GPS coordinates in countless electronic devices and creating an entirely new class of geolocation services and apps.

When it first appeared in the iCN 720, NavPix seemed like an add-on, partly because of its less than seamless integration with the main screen. The N series, however, is built for it.

The N40i is the mid-range machine that sits between the N20i and N60i. Compared to the N60i, it has a smaller colour touchscreen (3.5in vs 4.3in) and less flash memory for maps (256MB vs 2GB). But it has to be one of the best-value GPS in-car units on the market (given that it incorporates the SiRFstarIII chipset GPS receiver technology and most of the advanced navigation features found in more expensive

devices — and a camera). Usability wise, we really like that fuel and parking have their own buttons, since they'll always be the most frequently requested destinations.

Most of all, Navman is to be applauded for its philosophy of enhancing the navigational capabilities of its devices, rather than adding irrelevant features to them. For example, it has done a deal with Lonely Planet to offer NavPix users travel images with GPS co-ordinates. While it's a bit Sydney-heavy right now, users from other cities will be able to upload their own NavPix photos for others to download.

Tony Sarno



CONTACT	Navman
PHONE	(02) 9879 9000
ONLINE	www.navman.com
MARKET	Everyone
PRICE	\$849

✓ NavPix: new-gen GPS chipset.

VERDICT ★★★★★

✗ Not wide-screen.



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(ACTUAL GAME SCREENSHOT)

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BenQ FP241W

First to market with HDMI, but is it worth the extra cost?

The once clearly drawn lines of consumer electronics and computer devices have quickly merged into more of a hairline fracture, the two industries well and truly in bed with each other.

As a result, the once humble 4:3 aspect ratio monitor for word docs and web browsing has become a shrinking market, falling prey to dual-purpose screens. Daytime spreadsheeting, with the added ability to emulate (or replace) your TV at night when the entertainment pangs hit.

While most of the major players have focused on bringing down the price point of 19in displays, Dell

took an aggressive line and offered 24 inches at well below \$2,000. Likewise, Samsung's SyncMaster244T is an exceptional screen, but the price is a bit heavy going for entertainment users. Now BenQ has hit back with a model smacking strangely of Dell's 2407WFP, but with the addition of an HDCP-ready HDMI port. A few of the other manufacturers already ship units with HDCP support, enabling high-definition playback come Vista, but only offer it via DVI, meaning you'll need an HDMI/DVI cable or a device with DVI out to use it. BenQ's choice to include an HDMI port on the FP241W means

Blu-ray players and other consumer devices supporting it can be plugged straight in and use this monitor as a shared display.

We ran it through our staple display benchmarks and were impressed with the colour range and tone; ramping appeared smooth without stepping. BenQ quotes 6ms grey-to-grey, or 16ms black-to-white. We don't buy into the millisecond myth, so instead we've tested it the way we'd use it at home: playing games and watching movies. The display handles very much like the Dell model, down to the display pivot and, with the exception of the different chassis layout and

side-mounted buttons, the two would be hard to pick apart without the HDMI.

A great multimedia display for just about anything, it does come at a price premium for the extra port, but whether you can justify the extra cost will depend on what you want to do with it.

Dan Chiappini



• **CONTACT** BenQ
• **PHONE** 1300 130 336
• **ONLINE** www.benq.com.au
• **MARKET** Everyone
• **PRICE** \$1,799

✓ Sharp, bright display; HDMI.

• **VERDICT** ★★★★★

✗ Slightly more expensive than competition.

ATI Radeon X1950XTX

More grunt for gaming enthusiasts before DirectX 10 changes the game.

The X1950XTX is based on a slightly tweaked version of the R580 core, the chip present in the previous model, the X1900XTX. Still based on 90nm fabrication, the big changes in the new card are the move to a completely redesigned cooler and GDD4 modules, making ATI the first company to ship product based on the newest memory. It's great to

• **CONTACT** ATI
• **PHONE** N/A
• **ONLINE** www.ati.com
• **MARKET** Performance enthusiast
• **PRICE** N/A

be first, but you need to do something with it; ATI has, pushing the memory to 1GHz with an effective double rate of 2GHz, which really starts to add up in a CrossFire setup.

We threw our kit head-to-head with its predecessors to see

✓ Cooler and quieter; future GPU computing.

• **VERDICT** ★★★★★

✗ Hard to justify if you're holding out for DX10.

what sort of performance is being offered to potential upgraders.

Our 1,280 x 1,024 4xAA 3DMark06 test showed a variance of just over 1,000 marks between the two; not a huge upgrade, but the 6.10 Catalyst drivers are still in their infancy stage, so we only expect this to grow. Bumping the res up to 1,920 x 1,200 with four samples of AA enabled (to test the full HD gaming experience) saw the lead drop to just under 650 marks in favour of the 1950XTX, returning a score of 4,198.

Real-world game tests in Quake 4 continued the trend and

showed a clear 10 frames per second difference for the X1950.

Most interesting is that the 6.10 Catalyst drivers support ATI's new Stream computing initiative, a distributed computer project to help aid research into Cancer, Alzheimer's and Parkinson's disease, with other potential uses in the future.

Quite possibly the last series of cards to be released prior to both DirectX 10 hardware, the improved cooler makes the card much more bearable, while the memory improvements and slight GPU rework may open the door to other non-conventional uses of GPUs, such as physics, and perhaps put the CPU into a backseat role. In the meantime, it's a great-performing, top-shelf graphics card with a modest price tag — and a social conscience as well.

Dan Chiappini



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Compro VideoMate T100

Low-end PCI tuner that affordably covers the essentials.

The VideoMate T100 is a fairly basic HD card — a digital-only single-tuner model with, unlike pricier Compro models, no facility for turning the PC on or off. That said, it includes a compact infra-red remote control and receiver plus an S-Video input for showing or digitising analogue video.

The software is straightforward, especially from the remote control, but the normal XP-style windows for scheduling or adjusting settings jar against the controller window, the charcoal border and the buttons for the video windows.

The specifications call for a 2.4GHz system for HD and 1GHz for SD (1.7GHz for SD recording and timeslipping). With a system based on a Sempron 3500+, we were able to timeslip an HD signal while simultaneously watching the corresponding SD and program

guide channels. This isn't very useful unless the station is multi-channelling, and although each subsidiary window can be muted independently, muting the main window shuts off all sound. Using the live video as wallpaper is amusing, but of doubtful value; keeping a small TV window open on top of other apps is more useful.

The T100 was more demanding of the antenna than some other tuners we've tried: an antenna that had worked well with several other DTV devices could only pull in a couple of stations, but we had complete success with a different indoor antenna. There's no media centre software to integrate the card with resources like digital photos and audio, but it's compatible with Media Center Edition 2005.

The included DVD player application has a similar interface

to the TV software and responds to the same remote controller, which has buttons to activate or exit both applications, as well as the usual functions such as volume and channel. Given the S-Video input, we would like to see a bundled copy of Ulead DVD Movie Factory (as included with the VideoMate U500) and a composite adaptor to help preserve those VHS or Video 8 home videos.

Stephen Withers

• **CONTACT** Anyware
• **PHONE** (03) 9763 8200
• **ONLINE** www.anyware.com.au
• **MARKET** Everyone
• **PRICE** \$85



✓ Affordable; basic HD tuner.

• **VERDICT** ★★★★★

✗ Needs a good antenna.

Linksys Wireless-N WRT300N

Draft N routers just keep on coming.

The first thing you notice about the WRT300N is the unusual paddle-shaped antenna bookended by a conventional pair. We couldn't find any guidance in the manual concerning antenna alignment, so we positioned them vertically as shown to the left.

The basic specs of this Draft N device are predictable — wireless, four-port 10/100 Ethernet switch and a router. The router specs are similarly predictable: NAT, DHCP (with optional fixed addresses), dynamic DNS (DynDNS.org and TZO.com are supported), VPN tunnelling, port forwarding and triggering, DMZ and a SPI firewall that can also block Java and ActiveX as well as cookies.

Access controls seem flexible but patchy. Keyword filtering seemed inconsistent: some pages were blocked even though the keyword didn't appear in the URL,

and others were passed despite the keyword appearing in the page. Time-of-day blocking worked, but you couldn't set your watch by it. Up to ten access control policies can be configured, but only one type of control can be applied per policy, so denying access during a curfew period and always blocking certain applications requires two policies. When web access is blocked, we'd prefer to see an explanation from the router, rather than leaving the browser to present a "failed to load" error.

Quality of Service is increasingly important; the WRT300N supports WMM plus prioritisation by app, Ethernet port or MAC address. The

Voice Device setting is a special case of the latter, set to highest priority.

The wireless side supports various flavours of WPA security, including PSK2, and you can set up a whitelist or blacklist of wireless MAC addresses.

The WRT300N and the matching WPC300N PC Card adaptor equal the short-range throughput of the D-Link RangeBooster N 650, but performance at the most distant parts of the premises was slightly faster than the RangeBooster's.

We hope that Linksys will provide Secure Easy Setup (or equivalent) functionality through a firmware upgrade down the track.

Stephen Withers

• **CONTACT** Linksys
• **PHONE** 1800 678 808
• **ONLINE** www.linksys.com.au
• **MARKET** Everyone
• **PRICE** \$279.95

✓ Good speed, range and features.

• **VERDICT** ★★★★★

✗ It's a Draft 802.11n device.



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Topfield TF6000PVRt

A Personal Video Recorder means your TV viewing will never be restricted again.

Topfield PVRs have dual standard definition tuners and record to a hard drive. They let you do cool things like pause and rewind live TV, record two programs at once and watch the beginning of a show while you're still recording the end. Another great feature is a button to zap ads by skipping forward 30 seconds.

The TF6000PVRt is Topfield's first recorder with Wi-Fi, plus it sports composite, component, S-Video and SCART outputs as well as a SCART input (but it can't record from this). The 200GB hard drive is good for around 100 hours of recordings and automatically buffers the last 59 minutes of whatever you're watching, but this resets when you change channel.

Topfield recorders can access IceTV's seven day Electronic Program Guide (EPG), which lets

you browse up to a week in advance and select which programs to record. Downloadable from the internet, IceTV costs \$3 per week but Topfield throws in a six-month subscription.

The Wi-Fi feature can automatically download the IceTV guide. It also provides remote access, from computers on your network or the internet, for scheduling recordings and transferring files to and from the device. Unfortunately you can't play them on your PC or burn them to DVD without a complicated conversion process. Only the

CONTACT Topfield Australia
PHONE 1300 889 803
ONLINE www.topfield.com.au
MARKET Everyone
PRICE \$1,249

✓ Can download IceTV guide via Wi-Fi.

VERDICT ★★★★★

✗ Not high definition.

keenest of enthusiasts would bother, especially since it takes about 80 minutes to download a one hour show via HTTP or FTP. The recorder can't access files across the network, so you have to copy them back to play them again.

The Topfield range is desperately crying out for a DVD burner. The TF6000PVRt's other main shortcoming is it's only

standard definition, as the release of Topfield's high definition TF7000PVRt has been put on hold for 18 months. Even so, if you consider a seven day EPG an essential component of a PVR — but don't want a computer in your lounge room — the Topfield TF6000PVRt is the best money can buy in this country today.

Adam Turner



Chimei 221D 22in LCD Monitor

Cheap and cheerful, you bet!

Chimei Optoelectronics (CMO) wouldn't be the first LCD brand to spring to most people's minds, but you'd be surprised just how many people use them. CMO is a first-tier manufacturer for LCD panels in Taiwan — it supplies the guts to CMV monitors

(a subsidiary), Dell LCDs, Samsung TVs and more. As it stands, CMO is one of the top four worldwide LCD manufacturers — 10% of all LCD screens sold in Australia are CMO.

The 221D is a 22in wide-screen LCD, running at a native res of 1,680 x 1,050 (WSXGA), using a 6-bit panel (limited to 16.2 million colours). And, it's less than 600 bucks. This is the first foray by parent company Chimei at selling its own branded products (in competition with its own customers) at a much, much cheaper price tag.

What's the catch, I hear you ask? The fit and finish of the 221D is really cheap and nasty. The screen's frame is cheap plastic, there's no adjustment up and down, and it really looks like it was picked up from a bargain bin. But, all of this can be forgiven.

The Chimei 221D did surprisingly well in our testing. Nokia's Ntest monitor-testing tool gave us clear, bright colours across all corners of the screen. There was no blurriness and very little to complain about in general. The Moire tests showed a moderate amount of waviness in dense lines, but it's far from the worst we've seen. DVD testing was a little

blocky, mainly due to the high resolution of the screen. The screen's reported 5ms response time looks about right, and there's no noticeable tearing or blurring during our game tests.

The screen supports both VGA and DVI inputs, but there's no provision for any video inputs, either digital or analogue (though of course, video devices supporting DVI can be used). It's bundled with VGA, DVI and power cables, but there's no other extras in the box. The Chimei 221D 22in LCD is a real budget monitor that doesn't skimp where it counts — your eyesight.

Nick Race



CONTACT Protac
PHONE (02) 8748 8888
ONLINE www.protac.com.au
MARKET Everyone
PRICE \$599

✓ Great panel; ultra cheap.

VERDICT ★★★★★

✗ Looks tacky; no video inputs.

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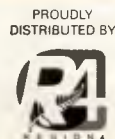


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TELSTRA'S NEXT G NETWORK LAUNCH: COLD WATER DUMPED ON TELSTRA'S CEO. TURN TO BROADBAND NEWS
PAGE 95

Telstra's Next G card offers good speeds, but we're wondering how it will cope once the network gains popularity with users.

Telstra BigPond Wireless – Next G



Telstra's 3G HSDPA wireless broadband network is a winner in terms of speed.

The BigPond Wireless Next G card is actually a PCMCIA GlobeTrotter HSDPA card from the Belgian company Option. Wireless enthusiasts will be pleased to know there's an external antenna connector, but the card also features a clever pop-out dual-panel antenna which uses a diversity reception system to select the strongest signal received from either the horizontal or the vertical antenna at any moment.

The service takes 7.5 seconds to log in and, once connected, it's clear that Telstra certainly isn't fibbing about the speeds possible with HSDPA. A test download of a 30MB ZIP file from a fast Australian server yielded around 220KB/s — that's around 1.7Mbit/s and actually faster than the 1.5Mbit/s ADSL connection that we ran a control test on, which only achieved a 161KB/s average. Upload speeds on Next G were consistently around 42KB/s — around 336Kbit/s.

Bear in mind, though, that our testing was done just three days after the launch of the network, so we were probably largely alone roaming the network, apart from a

CONTACT Telstra BigPond
PHONE 13 12 82
ONLINE www.bigpond.com
MARKET Everyone
PRICE Card: \$299 (plans from \$29)

few lone-wolf Telstra engineers working night-shift [cue howling wind and tumbleweed]. Given that the bandwidth in each mobile cell is shared with other users, it's possible that those speeds will drop as more users sign on to use the network.

Latency — the time it takes for a packet to travel across the radio link and an acknowledgement to be sent back from the other end — was impressive for a mobile network. In the Sydney CBD, it was around 90ms, and in a suburban area, around 110ms. In the back of a taxi, it remained mostly at around 110ms, with very occasional spikes to around 950ms when handing off between cells.

By comparison, pings on ADSL to a fast Australian server are typically about 50ms, so 90-110ms with very little jitter is twice as slow, but still well within the tolerance ranges for placing good quality VoIP calls.

✓ Promised 98% nationwide coverage; very fast; responsive.

VERDICT ★★★★★

✗ Some problems with logging in; no ExpressCard or USB version yet.

This is considerably better than other mobile-network-based internet services we've tested in the past, which often blow out to appalling ping times of up to two or three seconds, playing havoc with VoIP and even having a noticeable effect on web browsing as each object on a web page is requested — and delayed. Web browsing on Next G felt similar to using an ADSL connection.

The connection wasn't entirely stable though. In the middle of one test download (sitting stationary in a home environment), all data throughput stalled for about 20 seconds. At one point, after the connection had been idle for 10 minutes, we couldn't coax any data out of it and, after disconnecting, we couldn't reauthenticate. It started working again about 10 minutes later.

We weren't entirely surprised at these glitches. New networks have them. Telstra Next G is

geographically one of the largest mobile networks in the world, built in just 10 months, using a very new extension of the 3G standard at a non-standard frequency. It'd be fair to expect some teething problems. But then again, if we were paying \$199/month for the 3GB 550-1,100Kbit/s plan that was lent to us for testing, we'd be less happy. Fortunately, Telstra does offer a BigPond Wireless money-back guarantee, so you can try it out for yourself with no risk.

It's also worth noting that Telstra currently only has a PCMCIA card available; there's no ExpressCard or USB version for people with newer laptops that only have ExpressCard slots. Although HSDPA ExpressCards do exist overseas, ones that support Telstra's special 850MHz frequency (and other technical requirements, such as diversity reception) aren't yet on sale.

At the time of writing, desktop modems were still "on the plane" metaphorically speaking, though Telstra has promised one that comes with an Ethernet port for driverless connection.

Dan Warne



trendmicro.com.au

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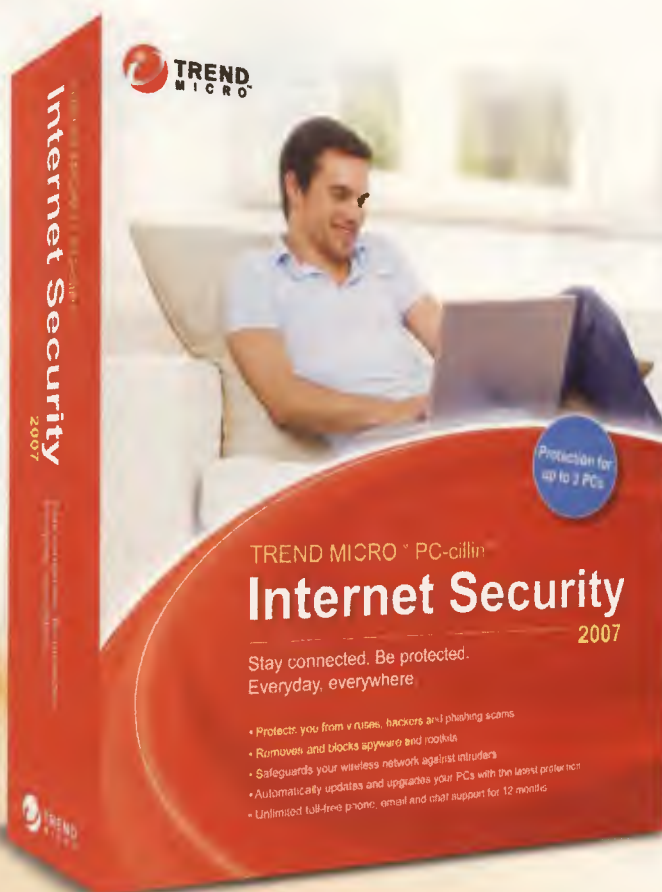


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Adobe Acrobat 8 Pro Beta 3

Adobe realised that Acrobat 7 was a labyrinth of cascading menus... and fixed it.

One often gets the feeling that there's more to Acrobat than meets the eye. Adobe has improved Acrobat 8's UI out of sight making features much easier to find.

One of the task-oriented step-by-step wizards in Acrobat 8 is "combine files", making it a cinch to combine many PDFs into one, then crunch the file size across the whole document. It can load docs alphabetically, or you can manually configure ordering. This was a real head-scratcher in Acrobat 7.

Lawyers and corporate-types will like the automatic archiving of email. It can pull emails from Outlook or Lotus Notes and save them into a

PDF archive. This was present in Acrobat 7, but is now in an email-client-like interface for browsing archived emails. Everything in the PDF is also pre-indexed for search.

Form creation is much easier. You can run a wizard on an existing form (even scanned ones) and Acrobat will do its best job of finding the form fields. Users of the free Reader 8 can now fill in forms and save them with fields completed to disk (why this wasn't included in Acrobat 1.0 we don't know, but we're glad it's there now.)

You can also set up forms with a "submit by email" button — Adobe Reader will submit results to you by

email and Acrobat can collate the results into a table.

Adobe has introduced "redaction" — the ability to black-out lines of text in documents and have all trace of the info securely nixed from the file. (Acrobat 8 will be heading straight to the back offices of Attorney-Generals around the world).

Adobe has included the online conferencing tool it acquired from Macromedia — Breeze — as part of Acrobat. It's called Acrobat Connect and allows up to 15 people to view a document on screen, collaborate together and have a VoIP conference call. It wasn't available for testing when we were using the beta, but pricing looks

rather discouraging anyway: at US\$39 per month or US\$395 per user per year, it's not exactly going to catch on like wildfire.

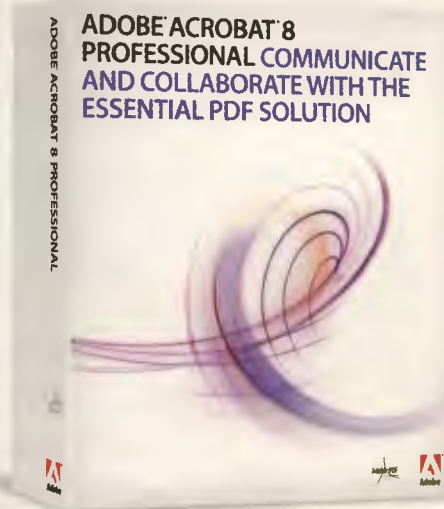
Dan Warne

.. CONTACT Adobe
.. PHONE 1300 550 205
.. ONLINE www.adobe.com.au
.. MARKET SMB / Enterprise
.. PRICE \$755 (\$275 upgrade)

✓ Big user interface improvements; advanced tasks now easier.

.. VERDICT ★★★★★

✗ Acrobat 7 can actually do a lot of the stuff, if you can figure out how.



iPod nano

It's been rebuilt, but is it any better?



With a better screen, a new look and, most importantly, up to 8GB of space in a tiny device, there's a lot to like about the design tweaks Apple has made to the latest iPod nano.

This nano occupies a good middle-ground between 1GB players and slightly higher-capacity micro-drive players. You get space for thousands of songs and 24-hour battery life, but in a tiny package that won't put as big a dent in your wallet.

And when we say tiny, we mean tiny. To the naked eye there's no noticeable size difference between the new 4GB unit we've looked at and the older 2GB model, this new unit has twice the capacity in the same slim wafer. Any smaller and it'd start to get tricky holding it.

The next thing you notice is the screen, which is noticeably brighter and easier to read. There's also a

slick new aluminium case, which has a slight plasticity feel. The colours have a brilliant fluorescent look that don't seem to scratch as badly as the previous models. We're not saying it doesn't mark, but at least it doesn't smudge.

Apple has wisely decided not to mess too much with the nano's on-screen functions, the major new addition being a search tool. Type in search letters and you get a list of music generated on the fly. It's similar to a mobile phone search.

Our one big problem with the nano is the lack of an FM radio. Fine, you might say, I don't use that anyway. Well OK, but it's a dealbreaker if, like this reviewer,

you listen to the radio on the bus on the way to work (yep, even the commercial stations). Similar-sized MP3 players like SanDisk's Sansa have this function built in — not as an optional accessory.

There's also iTunes 7, which was criticised early on for being buggy. Apple has updated the software, but, for iPod-knockers, the software is still the gadget's biggest weakness — it can be confusing for the uninitiated.

That aside, this is a top-class player. We almost gave it a Highly Recommended award, but for people wanting a radio we marked it down slightly.

William Maher

.. CONTACT Apple
.. PHONE 13 36 22
.. ONLINE www.apple.com.au
.. MARKET Everyone
.. PRICE From \$219

✓ Tiny for up to 8GB; bright screen; less smudges.

.. VERDICT ★★★★★

✗ No radio.

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Sony A100 vs Canon EOS 400D

Sony's DSLR makes a claim for alpha dominance, but Canon has other ideas.

Sony has long been in the point-and-shoot market, but the arrival of the A100 marks a "getting serious" moment for the Japanese giant. At first glance, you get a sense that they intend to grab a good share of the low-end digital SLR space.

The A100 is very comfortable in hand, both in weight and design. Controls are well-placed and easy enough to learn, while different enough to make you stop and think — just for a moment — if you've used other SLR brands before. They're not reinventing the wheel, but making an admirable attempt to adjust things for better usability.

The camera feels very responsive, with 3fps shooting and unlimited burst when shooting JPEG (as long as your memory card can handle it). Speaking of which, Sony has amazingly stuck to DSLR convention by using a Compact Flash slot, while including a smart adapter for Memory Stick Duo. With in-body optical image stabilisation, the 10.2MP CCD gives very nice results and shooting is possible across JPEG, RAW and RAW+JPEG.

The camera tested had the Eye Start AF switched on by default — and boy, was it annoying. At every turn, the camera was trying to predict the focal length you wanted. I can only assume it would also be a battery drain? This was a good opportunity to check the settings menu, which was easy to navigate (and turn this feature off).

The 9-point focus seemed a little loose, though this seems to follow the trend of adding many points to the mix. Not sure if I'm alone in thinking five ought to be enough for anyone (not that you can seem to find less than nine in new SLRs).

Shutter-speed heads down to the very short 1/4,000, with built-in flash sync operating down to 1/125 (or 1/160 with stabilisation off).

I've been picky here, but overall the experience was very impressive, the camera belying its status as a first outing (this is thanks to the Konica Minolta camera business Sony received earlier in the year). All in all, the A100 poses a solid challenge to Canon's entry-level digital SLR range.

As an update to the already-pleasing Canon EOS 350D, the 400D steps up to a 10.1MP CMOS sensor. I looked at this camera after the Sony and the initial reaction was how uncomfortable it feels in hand in comparison. Canon hasn't really developed the EOS body in quite a while, it seems. It's not a major problem though, and regular Canon users will be more than happy, I'm sure. It's just that when you switch to a more comfortable body for a while you get a sense of how much better an SLR can sit in your hand.

Another 9-point focus system here, though this time it feels like it's focusing where you would expect it to. With its competition putting stabilisation into the body, the lack of such a feature in the Canon range is a growing problem. You can find it in some higher-end Canon lenses, but this should definitely be a priority for Canon's future developments.

Shutter-speeds and ISO settings are identical for both camera models, though the Canon flash sync can go down to 1/200.

Likewise, shooting runs at 3fps for up to a 27-shot burst.

And again, the Canon in action just feels great. Very responsive, clean action and easy controls. Access to important controls like ISO, focus, shutter-speed and white balance settings seems easier here than on the Sony, and this may be the distinguishing factor.

The 400D also uses a reverse black-on-white display mode for shooting information, which is still readable even in very bright conditions. Clever work, Canon.

These cameras are hard to separate on a technical level, but the Canon's general performance seems to shine through. To be honest, it is hard to know if this is part familiarity, but there is just a little more polish to the important interface elements. Being the cheaper of the two really settles the deal, along with compatibility with over 50 Canon lenses. But we cannot mistake being happy about the Sony A100 joining the market and look forward to more from Sony in this space in the future.

Seamus Byrne



CANON EOS 400D

• CONTACT Canon
• PHONE (02) 9805 2000
• ONLINE www.canon.com.au
• MARKET Prosumer
• PRICE From \$1,299 (body only)

✓ Good controls; responsive performance.
.. VERDICT ★★★★★
✗ No stabilisation; lacks comfort.



SONY A100

• CONTACT Sony Australia
• PHONE 1300 137 669
• ONLINE www.sony.com.au
• MARKET Prosumer
• PRICE From \$1,499 (body only)

✓ Comfortable; in-body stabilisation; CF in a Sony.
.. VERDICT ★★★★★
✗ Loose focus; some silly "features".



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digital networks australia

KTorrent 2.0.2

Looking for a native BitTorrent client with all the bells but none of the whistles?

KTorrent is a KDE application, making it a native alternative to the Java-based Azureus and, as a result, faster and more responsive.

It includes some pretty spiffy features, like an in-built search tab which takes advantage of KHTML to effectively be a browser within the client. A number of search engines are included by default, including Isohunt and Torrentspy, which allow you to search for torrents and launch them automatically in KTorrent.

A queue manager allows you to re-order downloads and uploads in priority, and the status of a torrent (including a list of the contained files, the number of leechers and

seeders, tracker feedback and all the usual suspects) can be seen in a tabbed information display. The peers connected to you include country of origin, and even show up with an icon of the country's flag (you know, just in case you forget).

Upload and download rate caps can be set, as you'd expect, and more importantly two of the newer BitTorrent technologies, encrypted protocols (helps to bypass ISPs rate-limiting P2P traffic) and DHT (Distributed Hash Table, allows distributed peers to talk directly), are both supported. These are the key features that make KTorrent an effective client for fast

and reliable downloads. Similar to Azureus, a plug-in system provides plug-ins to filter IPs, create logs, scan directories for new torrents, schedule bandwidth and provide extra information on torrents.

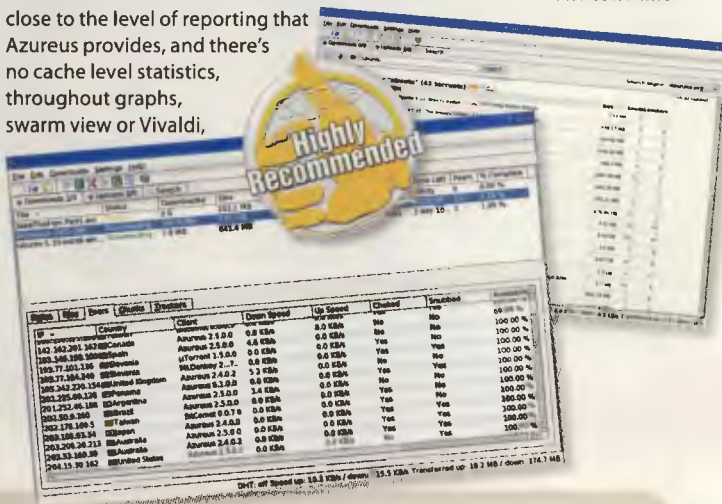
KTorrent doesn't even come close to the level of reporting that Azureus provides, and there's no cache level statistics, throughput graphs, swarm view or Vivaldi,

but then, you don't actually need any of this to just reliably download or seed torrents. As far as native Linux-based BitTorrent clients go, it's one of the better ones; worth a look if Azureus is feeling sluggish.

Ashton Mills

- **CONTACT** KTorrent
- **PHONE** N/A
- **ONLINE** <http://ktorrent.org>
- **MARKET** Everyone
- **PRICE** Free

- ✓ KDE-based client with all the essentials.
- **VERDICT** ★★★★★
- ✗ Not as feature-rich as Azureus.



Amarok 1.4.3

Among the multitude of Linux music players, Amarok stands out as one of the best.

Amarok has come a long way over the years, now sporting some of the smartest features to appear in any open source player.

Among these is a "context" browser which provides related information about the music you are listening to, from album covers and lyrics to browseable Wikipedia

entries of the artist. Statistics about albums/songs are also listed. The stats (broken down into song, artist, album and genre) are more than just a curious observation of your musical taste; they can be used to generate a "suggested" playlist by Amarok, so it literally learns your particular style. In fact,

a variety of "smart" playlists are available, including the usual favourite or most-played tracks, as well as a simple random 50, to hear to a snapshot of your collection.

Naturally, podcasts and internet radio are supported (a wide list of stations is included), as is last.fm if you wish populate your tastes to your last.fm profile. Amarok also sports portable media players and, depending on your distribution, transferring songs to your iPod can be a plug-and-play affair.

In addition to the stock features such as an equalizer, visualisations and OSD, Amarok also comes with an extensible scripting manager that allows you to download third-

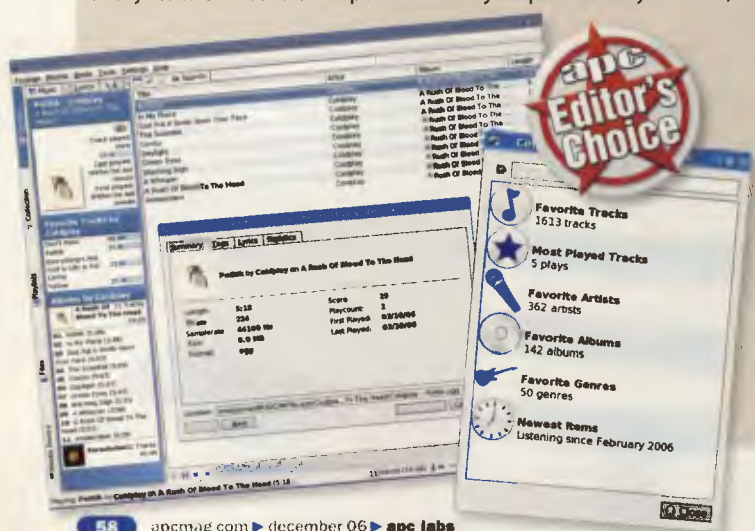
party functionality through plug-ins — the lyric downloader, for example, is a scripted feature, and there are many more. Similarly, a wide range of visual themes can be browsed and installed from the theme manager; no more hunting around on web sites or futzing around with install packages.

Amarok is simply a pleasure to use. It looks and feels sleek (part of its official design philosophy, no less) and is one of those apps you soon wonder how you ever lived without. If you want to do more than just play music (for which XMMS and clones are still ideal), Amarok is simply great.

Ashton Mills

- **CONTACT** Amarok
- **PHONE** N/A
- **ONLINE** <http://amarok.kde.org>
- **MARKET** Everyone
- **PRICE** Free

- ✓ Excellent, fully featured media player and music manager.
- **VERDICT** ★★★★★
- ✗ None really (but does, naturally, require KDE libraries).



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Multimedia Entertainment

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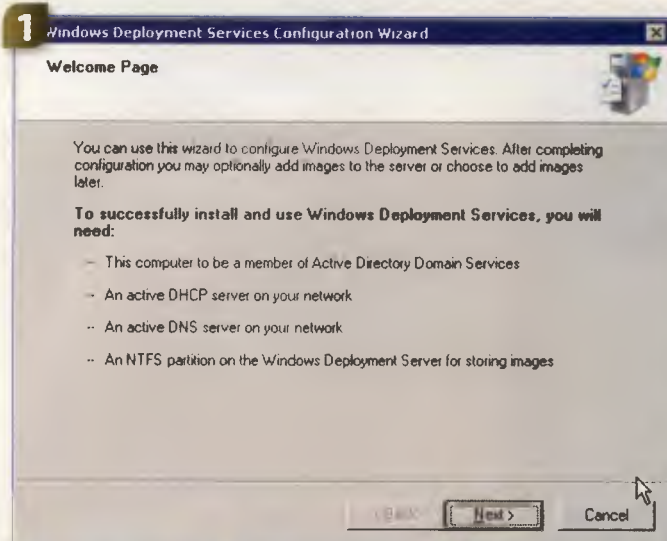
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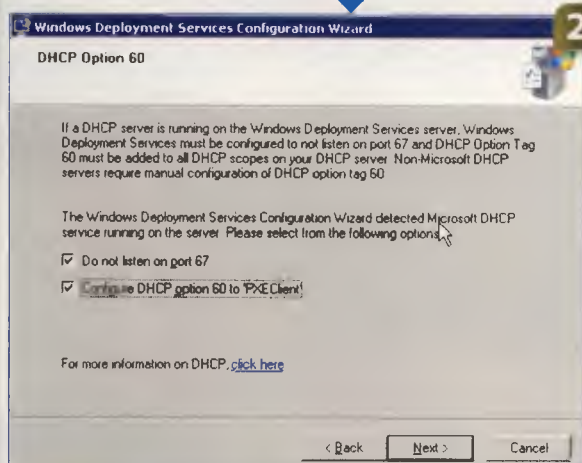


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Longhorn Server — deploying client operating systems automatically

Paul Schnackenburg explains how to set up a beta of the new Windows Deployment Services.

Windows Deployment Services (WDS) is a vast improvement over its predecessor, Remote Installation Services (RIS). Although it's part of Longhorn Server, Microsoft is also releasing WDS for Server 2003 (in Service Pack 2), mainly so that businesses can deploy Vista. The last thing Microsoft wants is for businesses to wait a year with Vista until Longhorn Server arrives.

In medium-to-large organisations, RIS has never established a strong foothold. It's too limited feature-wise to compete with third party solutions such as Ghost. WDS might change that: it's easy to work with, has enough flexibility for medium-sized environments and is faster than RIS. Windows Deployment Services also replaces Automated Deployment Services (ADS) for server deployments.

Many improvements in WDS stem from developments in the

Vista installation itself, such as the new imaging format, Windows Imaging (WIM), and the fact that Vista is built with imaging in mind from the ground up — this makes the whole process a lot smoother.

The other cool thing about the WIM format is that it's file-based. Other imaging tools currently operate at the disk-block level. That means that if you push out an image to the C: drive on a disk, all existing data on that partition is wiped. With the WIM format, existing data is left untouched — handy for migration scenarios.

Currently WDS is delivered as part of Business Desktop Deployment (BDD) or beta 2 of Windows Server SP2. Business Desktop Deployment is a collection of planning guides, tools and best practice guides from Microsoft for the deployment of Windows to client computers.

We tested beta 2 of BDD 2007, but BDD version 2.5 is available for

Server 2003 / Windows XP deployments. WDS will deploy earlier versions of Windows, as well as Vista, so businesses that use RIS (but which aren't looking at moving to Vista yet) should still have a good look at WDS.

Microsoft is striving to make it as easy as possible for you to push out Vista to your clients. If you don't have Microsoft Systems Management Server 2003 (SMS), your only option is physical presence at the PC to start the process, the so-called "Lite Touch". With SMS and the Operating System Deployment pack (OSD), you can push out Vista to client computers without any user or administrative presence (or the "Zero Touch").

LAY THE CONCRETE SLAB

To install the BDD, the server needs to have Windows Script Host 5.6, MMC 3.0, .NET framework 2.0 and MSXML 6.0 installed. In this beta

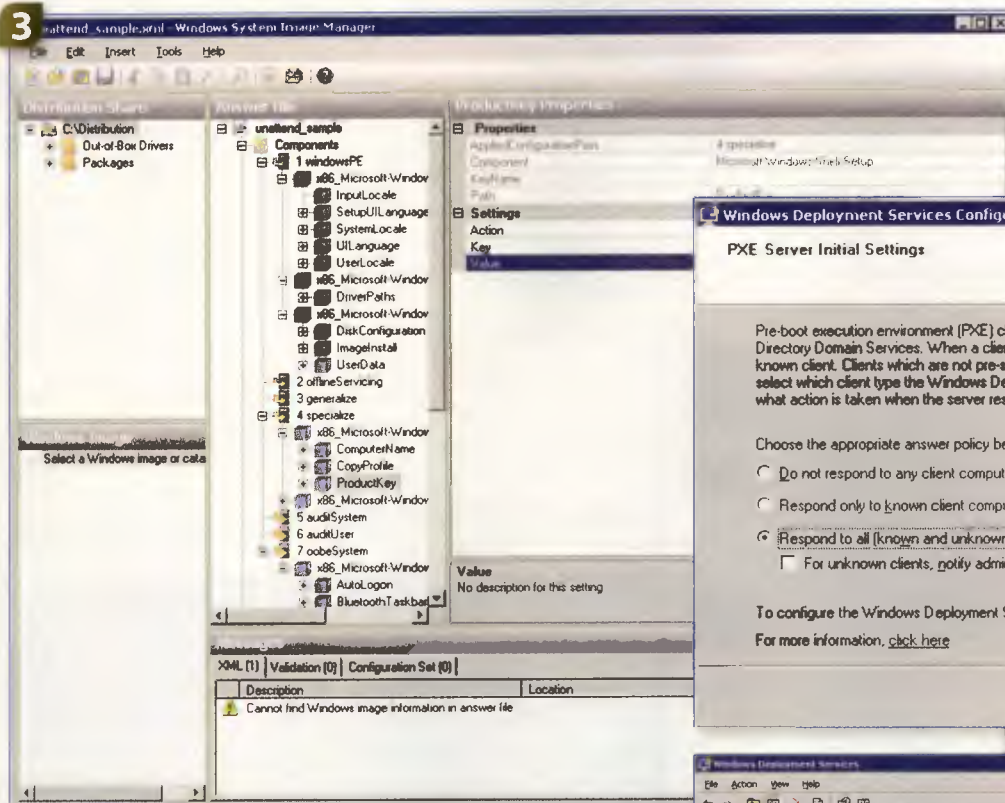
you also need to install RIS first, as this, strictly speaking, is an update. RIS shouldn't be configured, however.

① As with RIS, a few components need to be in place for WDS: Active Directory has to be up and running, as well as DNS and DHCP. The WDS server needs to have an NTFS partition for storing images but, unlike RIS, doesn't need it to be a separate partition/disk. This is still recommended for performance purposes, however.

② If WDS and DHCP are running on the same server, options need to be set so they don't conflict.

A major confusion in earlier versions of Windows was the number of different text files for controlling unattended installations. ③ That's all gone; Vista now uses the unattend.xml for all phases of the installation, as well as all different modes of setup.

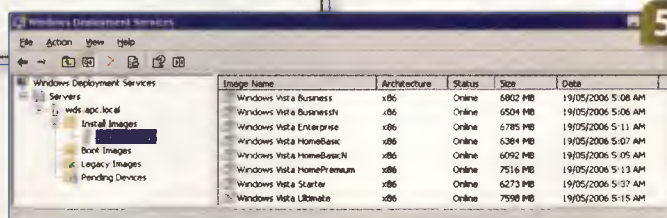
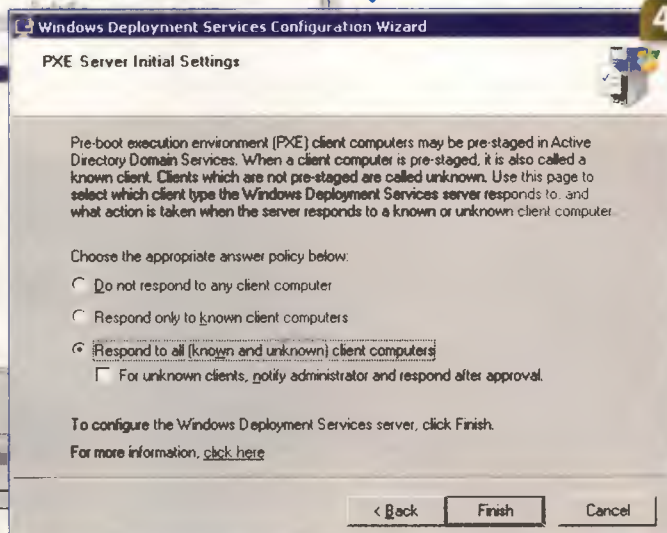
When an existing configured RIS server is being upgraded to



One single XML file for all the automated settings.

One DVD — eight Vista beta 2 images...

Do you hand out operating systems and applications to anyone, or only to those you know?



WDS, it's automatically set to legacy mode. In this mode, clients are still presented with OSChooser screens; tools like RISetup and RIPrep are used to create images, and management of the server is done through the RIS interface. The next step is mixed mode, where both WinPE and RISetup can be used and WIM imaging can be used. Administration on the server is done through the WDS interface.

Finally, you can convert the server (through the command line `wdsutil /forcenative`) to only support WIM images and WinPE — Native mode. WDS allows you to create images based on Windows XP and earlier versions of Windows in the WIM format.

Windows PE (Preinstallation Environment), which used to only be available to enterprise customers, is now included on every Vista DVD.

A strength of WDS is that you can use the WinPE environment

to configure partitions and disks prior to installation; in RIS, the deployment was an all-or-nothing affair. If you're deploying Windows XP or Windows 2000, they can still only be installed to the C: drive.

As in RIS, only prestaged (computer accounts pre-created) clients can be responded to (or alternatively, all client computers).

DO YOU KNOW HOW FAST YOU WERE GOING, SIR?

Microsoft's internal testing of WDS indicates that 75 concurrent installations from one server give adequate performance. This server was connected via gigabit Ethernet; the clients had 100 MB/s connections. If the server only had a 100MB/s connection, 25

connections gave reasonable results. In this scenario, maximum 30-minute imaging times were experienced and this was with thick images, Vista, Office 2007 and other productivity applications in one package.

We did our testing on a Pentium 4 server, with 512MB of RAM, running Windows Server 2003 standard. It had a 40GB 5,400rpm hard drive, and install times for a thin image with Vista were around 15 minutes on a 100MB/s switched network.

Using imaging to standardise your Standard Operating Environment (SOE) involves three steps.

First, create a new install and boot image on the WDS server

MICROSOFT IS STRIVING TO MAKE IT AS EASY AS POSSIBLE FOR YOU TO PUSH OUT VISTA TO YOUR CLIENTS

from the Vista DVD. Start a client computer that supports PXE boot (pronounced "pixie") or with a WinPE CD. A custom version of WinPE can easily be created in WDS as a Discover image; this can then be used to boot client PCs that don't support PXE.

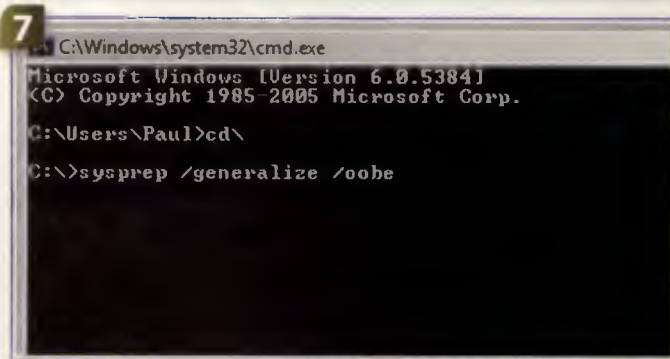
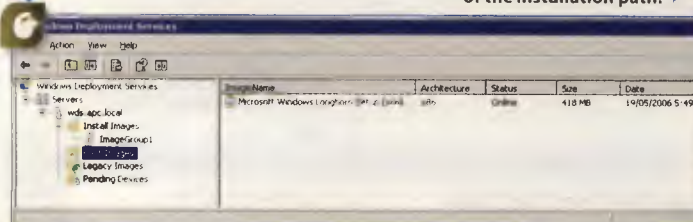
We used the PXE option on an AMD XP2000+ with 512MB of RAM. Network boot connects to the WDS server and loads a WinPE boot image which, in turn, presents each available image.

Installation proceeds as a normal DVD setup. When installed, the OS is customised, applications added, patching completed and any special drivers supplemented.

Once this process is complete, Sysprep is used to strip

...and one WinPE boot image.

Full control over every step of the installation path.



When the SOE is ready to be captured, you've got to make sure you strip out any personal information first.

All the metadata for a WIM file is stored in XML format.

all unique information from the registry and then WinPE is once again used. A capture image is a special boot image that starts the process of capturing an installed OS and uploading it to the WDS server. This captured, syspreped image is uploaded to the WDS server. Optionally, this image can be linked to an unattend.xml file, so that setup becomes a "no questions asked" affair. This image is now ready to deploy to as many machines as needed.

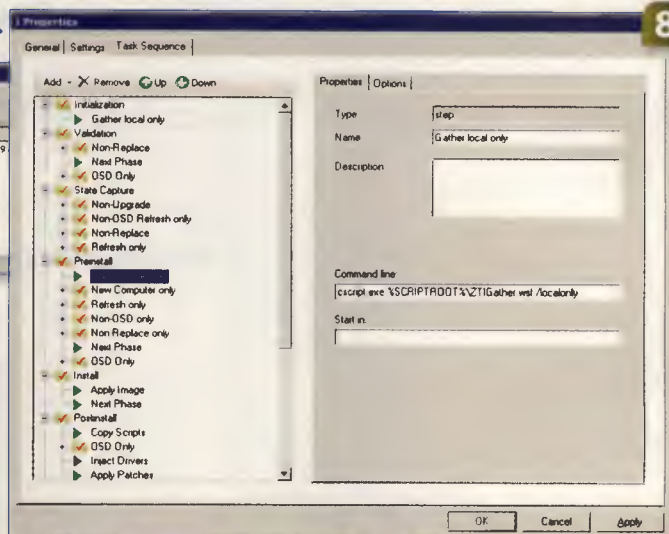
Windows Deployment Services is more complete than RIS, as it contains tools for creating CD (including spanned WIM files) and DVD-based images. These can be sent to a branch office for easy installation, including applications and customisations. Building your own boot PE CD is ridiculously easy, as is customising an installation of Vista and then creating your own install DVD. ③ The BDD adds support for task sequencing; each step of the install can be controlled in detail — a big advance over RIS.

DIET, OR FULL FLAVOUR?

A choice that has to be made when it comes to deploying client computers with any imaging technology, is whether to make images thick or thin.

A thick image is simply one copy with the operating system, applications and all configuration settings in the package. This makes it simple to deploy, as everything is in the package and little additional scripting is needed. As the user restarts after installation, all applications are immediately available. A thick image will, however, take more storage space and longer to install (due to the amount of data to shuffle), and is more difficult to maintain over time.

The other extreme is the thin image, where only the operating system is imaged. All applications are installed later, perhaps through SMS or software deployment in Windows Server. This is less taxing on storage space and network load, but requires more work



to get the installation of the applications right.

A hybrid of the two is a thin image with the scripts to install all core applications on first boot. This delays the network load associated with applications from imaging time to reboot time.

HOW'S YOUR OFFLINE ACCESS?

In earlier versions of Windows there were only two different

states of an "image" of an operating system. One was before installation — compressed files in the I386 folder. The other was installed and online. Even if you had a dual-boot and looked at an offline Windows on another partition, there were really no tools to allow you to work with that image.

WDS and WIM changes all that, because you can mount a WIM image as a folder in the file system. Not only that, but you can inject drivers, add patches and service packs (Vista only) and use other tools to work with this "offline" state of the OS. Windows



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10 program Files\Windows AIK\Tools\ETools>imagex /mount /src:Distribution\Operating Systems\Windows 7\data\osinstall\win7\1 /c:\Mounted_WIMS

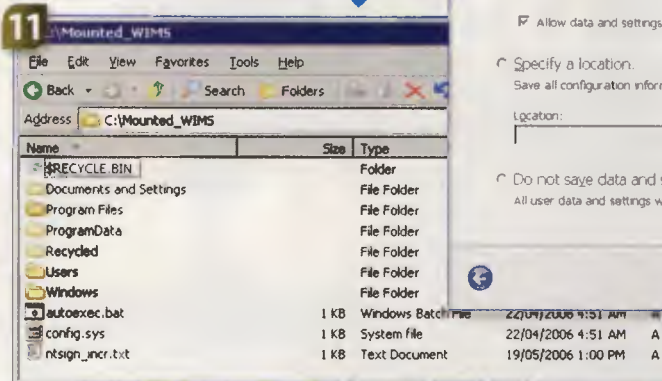
ImageX Tool for Windows
Copyright (C) Microsoft Corp. 1981-2005. All rights reserved.

Mounting (CMD): (C:\Distribution\Operating Systems\Windows 7\data\osinstall\win7\1) /c:\Mounted_WIMS

WARNING: Existing files under c:\Mounted_WIMS will be overwritten.
Mount Succeeded.

Mounting an image in a folder...

...and having full access through Explorer.



Specify user data defaults.

- ☒ Allow the user to configure user state options.
- ☐ Automatically determine the location.
Let the system determine the best location based on available disk space.
- ☒ Allow data and settings to be stored locally when possible.
- ☐ Specify a location.
Save all configuration information for later restoration.
Location: _____
- ☐ Do not save data and settings.
All user data and settings will be lost.

Where to store all those MP3s and videos the user accumulates over the years?

Total control over every aspect of WIM files.

12 program Files\Windows AIK\Tools\ETools>imagex /unmount /commit /c:\Mounted_WIMS

ImageX Tool for Windows
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Unmounting: (c:\Mounted_WIMS)...

Successfully unmounted image.

Remember to unmount (Linux, anyone?) and commit your changes.

Deployment Services will make it much easier to maintain images over time.

If you're mounting a WIM file, don't do so in the root folder — as it will hide existing files; it's best to create an empty folder and then mount in that folder. ⑩ The command line tool ImageX is your friend; before it can be used, the WIM file system filter has to be installed (wimfltr.inf).

⑪ Mount an existing WIM file and the entire installation is available, either for read-only access or full access. ⑪ Files can be added (and drivers injected etc.). Remember to commit changes with the right switch as you unmount the image.

⑫ WIM files can contain several editions of the OS in the one file and, where there are duplicate files, the storage space consumed is minimised because

of Single Instance Storage (SIS). A file is only stored once, with pointers to this file for all other appearances. That's how eight different versions of Vista fit on one DVD. Windows System Image Manager (SIM) is used to change languages supported in an image, as well as injecting drivers and updates.

Another great feature in Vista is that different Hardware Abstraction Layers (HAL) no longer force you to create separate images; Vista will automatically change to the right one.

WHERE DID THE DESKTOP PICTURE OF MY WIFE AND KIDS GO?

Pushing out Vista to new computers is all well and good. But the reality is that many businesses will be upgrading or migrating from Windows XP and

earlier versions to Vista over the coming years.

⑬ Business Desktop Deployment helps out here by including the User State Migration Tool (USMT), so that current profile settings and documents on the PC can be saved, the new OS installed and the settings transferred to the new OS. This is better than the upgrade option, as the OS is pristine (with no legacy hassles left in the registry or the file system).

⑭ One option is to save this data

on a server, but, as each user's data can easily run into gigabytes, a better option is to store this data locally. Remember that the WIM format is file-based and non-destructive, so you can migrate a PC with the USMT data stored on the local disk (and then reapply to the new OS).

Missing from WDS for true enterprise functionality is Wake on LAN for totally unattended installations, bandwidth control, monitoring and multicasting. PXE traffic also doesn't work with some routers. That's why Microsoft offers SMS. With WDS, third party products now have a real contender in small and medium-sized businesses. APC



BUILDING YOUR OWN BOOT CD IS RIDICULOUSLY EASY — AS IS CUSTOMISING VISTA AND CREATING YOUR OWN INSTALL DVD

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2. HP	Compaq nc6400	\$2,899	www.hp.com.au	1300 304 889
3. Toshiba	Portege R200	\$3,410	www.isd.toshiba.com.au	13 30 70
4. Dell	Inspiron 640m	\$1,699	www.dell.com.au	1800 812 393
5. Acer	Aspire 5634 WLMi	\$1,999	www.acer.com.au	1300 366 567
6. HP	Pavilion dv2040tx	\$1,999	www.hp.com.au	1300 304 889
7. Sony	VAIO VGN-AR18GP	\$5,999	www.sony.com.au	1300 720 071
8. Toshiba	Qosmio G30 HD-DVD	\$5,499	www.qosmio.com.au	13 30 70

Notable notebooks

Nick Race and Dan Chiappini take a look at eight of the hottest notebooks for all walks of life: budget, business and media centre.

We look at a lot of notebooks here at APC. From the ultra-portables with their massive battery run-times (finally giving us products that will last an entire work day) to media centres and next-gen Blu-ray and HD-DVD products that will shape the future of digital media consumption.

We've looked at bargain-basement notebooks under \$1,000 and units more expensive than a small family car. Notebooks really are the last horses-for-courses area of PC hardware. So we thought, this month, we'd thin the ranks a little, opting to test the best of each

category. We've hand-selected the best and most-representative units from each category and run them through their paces to see which ones come out on top of the heap.

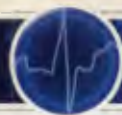
We've examined: budget, business and media centre notebooks. You'll find our ultra-portable notebook Labs Challenge (APC October, page 60) still gives the most thorough look at the light and mobiles (if that's your thing).

There's a lot to weigh up when considering a new notebook purchase; most notably, which category you fit into and your intended purpose for the machine.

We'd love to be able to point our finger at one notebook and tell you it'll be the cheapest, best-performing notebook with all the bells and whistles (and will run a day and a half solid without a battery charge), but it's just not going to happen. The laptop market has segmented greatly over the past few years and the idea of the all-rounder is quickly being phased out in favour of specialist configurations. With this in mind, most manufacturers are moving towards the "let the customer build it and they'll buy it" mentality, which only further opens the door

for mixing and matching the parts to suit your needs. With this comes constraints of design. For example, you won't be able to get an ultra-portable with a top-of-the-line GeForce Go 7900GTX card shoehorned in, as they're simply not thermally designed to handle the heat dissipation required.

There has never been a more interesting time to be in the market to purchase a notebook, do the leg work, decide what you need, plan future changes to your desires and then purchase accordingly. Read on for our look at the most commonly requested products in each field.



Budget notebooks

People love the portability of notebooks. It's easy to get swept up in the convenience of email, work and play anywhere at anytime, but financing your new toy can be a sobering experience. Dell and Acer continue to drive the base-level pricing for notebooks, and if you're willing to forgo some added extras such as high-end CPUs and graphics, generally the most expensive parts, you can pick up a notebook for around \$1,000.

We set a price cap of \$2,000 and set to work on finding the best budget notebook for productivity, occasional gaming and battery life (without trading off functionality).

Acer was first with its 5634WLMi model, which offered a Core 2 Duo T5600 chip clocking in at 1.83GHz: more than adequate for all our intended usage. Acer's budget model was the only of the three to

go above a 14.1in LCD; its 15.4in wide-screen is noticeably larger, giving more viewing space when gaming or watching a movie. We were pleased to see 1GB of DDR2 memory installed — while it may not seem like much, it will greatly offset the lower spec CPU for a more pleasant experience. Our unit came with a 120GB hard drive; corners have been cut slightly to fit the price point, and subsequently you only get a 5,400rpm drive (but it's still zippy enough to suit most users).

Acer has taken the well-worn path of going a step above Intel's integrated graphics, but only as far as the next pit stop, Nvidia's GeForce Go 7300. Both the Go 7200 (found in the HP Pavilion DV2040TX) and 7300 have the option of reverting to system memory when they need a bit more power to render images. It's a distinct advantage over integrated

graphics, but it's a bit like putting a huge exhaust system on your Daihatsu Charade — it'll only get you so far. Like the HP machine, the 5634WLMi includes the now token 1.3 megapixel webcam in the lid just above the display, letting you teleconference or create YouTube movies of your pets doing that cute thing no-one cares about. The machine ships with Media Center — a feature also available on the Dell Inspiron 640m (although neither includes an integrated TV tuner).

HP came to the party with its Pavilion DV2040TX, which is wrapped in a sexy-looking black chassis with a zen-esque swirl, making it as much a fashion item as a technological necessity. Our model came with the slightly older Intel Core Duo T2050 processor, the standard 1GB of DDR2 memory, an 80GB 5,400rpm drive and Nvidia

GeForce Go 7200 graphics. Our biggest gripe with this model was its touchpad, and having worked with all of the units, this is definitely the most cumbersome to use. Style seems to have seen functionality take a backseat in this case, as the touchpad responds so poorly that we were forced to use an external USB mouse to get any work done. Its surface causes fingers to stick and, at one point, we seriously considered a thin layer of cooking spray to get things moving. There is a handy touchpad-disable button, which we really like because, if like us, you've unwittingly bumped your cursor and overwritten a line of text or jumbled up an idea mid-sentence, you'll appreciate its value. There's also the onscreen notifier when you hit the Caps Lock key — not a killer app, but a nice little add-on. Although, if you're watching the



ACER ASPIRE 5634WLMi

HP PAVILLION DV 2040TX

DELL INSPIRON 640M



screen to see the message, surely you notice your key is enabled by the **LINES ALL IN CAPS?**

The system ships with Windows XP Professional and the included QuickPlay media player, turning your notebook into a DVD player or playlist at the snap of your fingers with its touch-sensitive controls.

Dell were last to submit a product for the category and turned in a bit of a mixed bag. Like both the HP and the Acer, Dell has opted for an Intel product — specifically, the Core Duo T2400 chip, 1GB of DDR 667MHz memory, 100GB hard disk and the always disappointingly underpowered Intel GMA 950 integrated graphics.

In stark contrast to HP's troublesome touchpad, Dell hasn't gone for anything fancy, just a basic touchpad and soft responsive raised

left and right mouse buttons: no gimmicks here, just an inexpensive, solid notebook with a reasonable spec for everyday non-power users. Although it has a considerably smaller footprint than the Acer model, the Inspiron 640m has a fairly small and compact keyboard which remains comfortable to work on, even for extended periods of time. Another tick in Dell's favour is its speakers. Even front-mounted (and with wrists covering them as you type), the sound remains almost consistent, with distortion and volume reduction a non-issue.

We ran all three units through our benchmarking suite and the tests really did put some distance between what seemed to be a fairly similar field. Acer led the charge, topping our PCMark05 test with 3,636 marks. HP, still in the game,



turned in 3,099 and Dell brought up the rear, nearly a thousand marks behind the leader, with 2,684 (care of its integrated graphics). 3DMark06 results followed the same pattern, with Acer's lead over HP cut to just 33 points, 670 to 637. Dell straggled behind with just 168 marks, again proving that even basic discrete graphics topple integrated parts.

The battery test was the real turning point, with Dell blowing

both the Acer and HP away by running just shy of four hours at 3:57. HP was the closest contender with 2:04 and Acer was left by the wayside after only one hour and 56 minutes of operation. This is the one test where integrated graphics shine and, had HP and Acer both used them, we don't doubt run-times would be higher (although 3D scores would be reduced to Dell level).

Much like with the Lenovo unit on the business side of the fence, you essentially need to make a conscious decision about whether battery life or performance is more important; as you can see, you can't have your cake and eat it too.



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Business notebooks

Choosing a notebook for your business needs is even more difficult than a notebook for entertainment or general usage. For business use, whether it's a thousand-client network or two blokes in a garage, both will have different requirements to consider when making a purchase. We've rounded up three interesting models that each fit a separate usage model. There's an executive-style ultra-portable, a more rugged, long-battery-life unit for the road warrior and a highly functional unit for general business usage.

Notebooks are experiencing a massive influx into offices at the moment, replacing the power and space-hungry towers on desks faster than ever before. The ease of management, support and replacement (and the increase in

application services) are turning the notebook into the new thin client. Deskbound notebooks for business users also tend to have screens easy on the eyes, inbuilt management and security implementations.

The executive-style model is the respected Toshiba Portege R200. This is an ultra-thin, ultra-lightweight model and very snazzy. The R200 runs an ULV Intel Pentium M 773 running at 1.3GHz, a CPU designed for very low heat output and voltage requirements for the thin and light market. The Pentium M 773 is a 400MHz FSB with 2MB of L2 cache. The R200 uses the Intel 915GMS chipset, including its graphics capability. Now, we've waxed long about the relative poor performance of the Intel 915 chipsets, though, in Toshiba's defense, including a discrete

graphics solution would kill the battery on this notebook much too quickly for comfort.

The Intel graphics power a 12.1in 4:3 screen at a relatively low resolution of 1,024 x 768. Truth be told, this is just too low for our liking. Though there's limited options at such a small screen size, 1,024 x 768 is the absolute minimum required to even browse the web these days and APC has never been about the absolute minimum. That said, the screen is bright, clear and quite easy on the eyes.

The R200 comes stock with 768MB of DDR400, which is decent, and a 60GB 4,200rpm hard disk drive; not massive by any stretch, but certainly on the right side of the bell curve. The Toshiba includes the usual complement of 802.11a/b/g Wi-Fi, Bluetooth 2 with EDR, Gigabit

Ethernet, VGA D-Sub out, three USB 2.0 ports, AC97 audio and a 56k modem. It's got a TPM chip installed, as well as fingerprint biometric capability. What the R200 is lacking is an optical or floppy drive. Both are sold as extras, so don't expect it in the box (which might make putting software on your new notebook a tad interesting).

So, just how big is this beauty? The Toshiba Portege R200 measures 286mm x 229mm x 20mm (at its thickest). At the front edge, the R200 measures less than 1cm thick, so it's pretty small. The package is enclosed in a magnesium alloy shell, with a polished metallic finish — and really looks a treat.

Our second business pick is the HP Compaq nc6400. This is the rugged, inexpensive model for a worker's desk. The nc6400 uses the



TRUSTED PLATFORMS

Security in business notebooks is most usually implemented with a Trusted Platform Module (TPM chip). At a basic level, a TPM is a chip containing a unique string known as an Endorsement

Key. The key is set when the chip is manufactured and cannot be changed. The upshot of this is that each notebook with a TPM chip can be authenticated on the network directly – and

unrecognised notebooks can be blocked from accessing a network altogether. Trusted Platform Module chips also contain a random number generator that helps strengthen encryption.

Fingerprint and biometric authentication is seeing a bigger uptake in notebooks as well. All three of the business notebooks that we tested here included fingerprint scanners.

Intel Core Duo T2400 processor at 1.83GHz. The T2400 runs at 667MHz FSB and has 2MB of L2 cache. The model we received was populated with 512MB of DDR2-667; a little light, but still within reason for business-related applications under Windows XP. The system uses the Intel 945 chipset with graphics provided by an ATI Radeon X1300 discrete graphics solution. The X1300 is an entry-level 3D graphics accelerator which, truthfully, would see little use in a business notebook, but still consumes its fair share of power off the mains.

What the X1300 graphics solution does enable is a great image on the nc6400's 14.1in wide-screen LCD at 1,280 x 800 pixel resolution. The screen has a matte coating, which massively cuts down glare under fluoro lights, making it much easier to use for extended periods. The notebook is equipped with a full complement of interfaces, 802.11a/b/g, Bluetooth, Gigabit Ethernet, three USB ports, VGA and CardBus. For storage, the model sent for us to test contained an 80GB hard disk drive, plus an 8x DVD+-RW DL with DVD-RAM support.

In the security bent, the HP Compaq nc6400 includes TPM support combined with a biometric fingerprint reader, plus a specialised SD security token slot in the side of the notebook, which allows quick insertion and removal for users of SD security schemes.

The third contender is the ThinkPad X60 from Lenovo. We recently gave the X60 our Editor's Choice award as part of our ultra-

portable roundup (*APC* October, page 60), and this time it's no different. The X60 is a very tiny, rugged road-warrior system with a monstrous battery life. Lenovo provided us with an extended-life battery pack to test, and though it added to the notebook's bulk, it pumped the operating time through the roof.

The X60 is a 12.1in sub-2kg battleaxe. The model for review this time around features an Intel Core Duo T2400 at 1.86GHz, 667MHz FSB and 2MB of cache. The system is kitted out with 512MB of RAM, of which 16MB is pilfered by the Intel UMA 950 graphics adaptor. Though this is less than we'd like to see, it can be upgraded at or after time of purchase. The X60 uses the Intel 945GM chipset, paired with the Core Duo processor.

Like the Toshiba R200, the X60 sacrifices an optical drive for the thin form factor, which can make life difficult in some circumstances. Similarly to the HP, the X60 uses a matte finish on the LCD panel, reducing glare under bright lights. The X60's panel runs at only 1,024 x 768 pixel resolution, which is low, but suited to the small size of the screen. Connectivity includes the usual array of ports; three USB 2.0, Bluetooth, Gigabit Ethernet, CardBus (but no ExpressCard), VGA out and a

FireWire port. There's a TPM chip for network security, plus a fingerprint scanner for user authentication.

All three notebooks showed their business-oriented nature on the test bench. All fell within their estimated ranges for performance and none will be setting any records any time soon! The most powerful of the three is the Compaq nc6400. This model managed a score of 3,423 in PCMark05, thanks to the ATI Radeon X1300 graphics adaptor, though in real terms it won't add any productivity to a work day. The Toshiba Portege R200 managed 1,381 (due to the low power

processor and basic graphics solution) and the X60 a score of 2,012. Battery life really sorted the wheat from the chaff. The X60 managed an astounding eleven hours, 54 minutes under load with BatteryMark (with the long-life battery pack installed); longer than a good work day. Without the pack, the X60 still lasted over eight hours, which is a great result in itself. The Toshiba Portege R200 ran for three hours, 27 minutes, due to the slimline batter pack. Lastly, the HP Compaq nc6400 brought in the middle ground, with a result of four hours, 21 minutes.



NOTEBOOKS ARE EXPERIENCING A MASSIVE INFLUX INTO OFFICES AT THE MOMENT, REPLACING POWER AND SPACE-HUNGRY TOWERS



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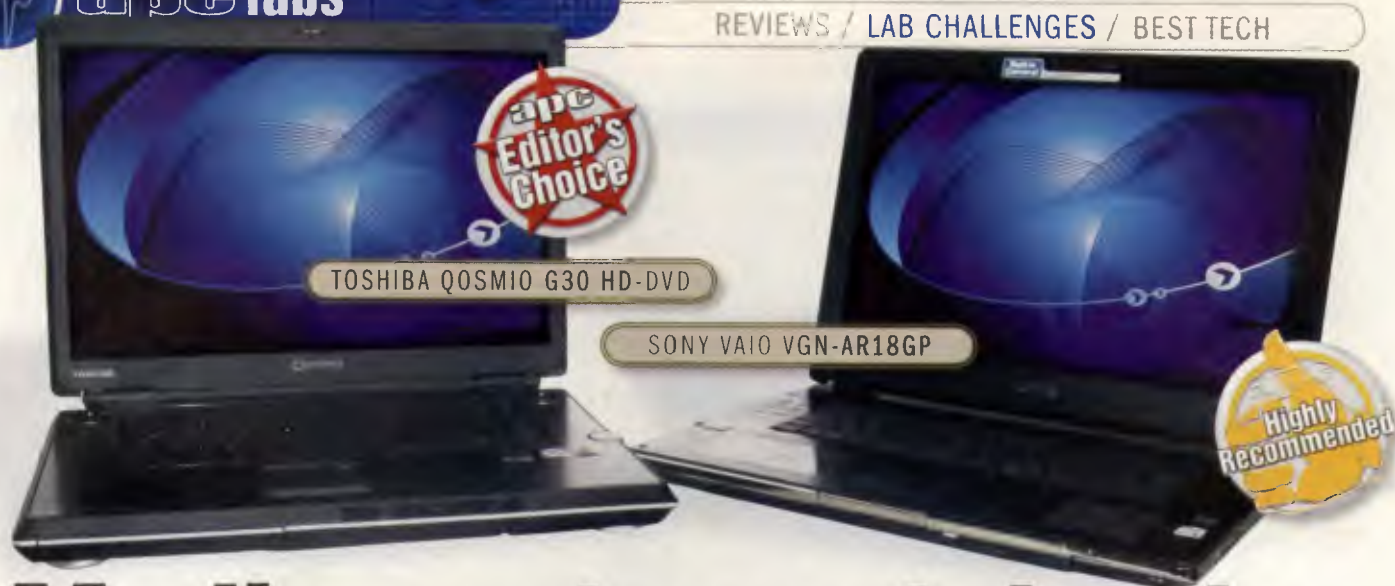
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TOSHIBA QOSMIO G30 HD-DVD

SONY VAIO VGN-AR18GP

Media centre notebooks

Media centre notebooks are huge and heavy, but offer clear, bright wide-screen monitors and enough pure CPU grunt to decode hefty HD video streams. Both models tested here feature 17in wide-screens; the average desktop monitor size was 15in just four years ago. This cuts down on portability, with these monsters climbing up to the 5kg mark. Nor can they fit into standard-sized notebook bags. Plus, we're hearing about and seeing prototypes of even bigger form factors: Dell and Pioneer have respectively announced 20 and 19in models. Though we're all for the bigger-is-better maxim, at what point does a notebook really stop being portable?

Microsoft Windows XP Media Center Edition (MCE) is the standard for media centre PCs, though there are still valiant efforts from various Linux distros. MCE notebooks are highly specced and thus quite expensive. Driving a high-resolution panel takes a good-quality discrete graphics adaptor; an Intel integrated solution won't cut it. Both Nvidia and ATI, vendors of discrete graphics solutions for notebooks and desktops, have video-decoding technology built in to their GPUs. Nvidia's PureVideo is a combination of hardware and software that increases performance for video decoding dramatically, giving the user a better experience when viewing HD video. No more stuttering or tearing of frames. ATI's

Avivo technology is similar to PureVideo. However, Avivo adds in converter tools to allow playback on various portable devices.

The CPUs in these notebooks are also quite powerful. Encoding and decoding HD streams takes a lot of processing power, so, to use the real functionality that MCE enables, like encoding on the fly, top-of-the-range CPUs are installed. Most multimedia models on the market use dual-core processors as a minimum, and it's nothing strange to see a top-of-the-line mobile CPU in a multimedia-specced notebook. Decoding HD video is a tremendous task, putting a heavy load on the system bus and CPU. Similarly, to fully make use of the multi-tasking capabilities of MCE, such as simultaneously recording and playing back HD streams, mastering DVDs and streaming content, there needs to be plenty of headroom in the processor department.

Sadly, the trade-off between the power-hungry hardware and huge screens is the battery life. It's amusing in an ironic way that most media centre notebooks are incapable of powering themselves through a single DVD. When you switch to HD content, battery life suffers even more. We're still waiting for fuel cells to be commonly available, and until then — don't get out of sight of a power point.

The first media centre notebook on the bench was the Toshiba Qosmio G30, a model we've seen

and given the thumbs up to in days gone by. This Toshiba model stands apart as an HD-DVD unit and the biggest notebook we've ever seen. The Qosmio G30 is a strange-looking beast; where most notebooks tend to curve, Toshiba chose jagged, but overall the design aspect works and wouldn't look too out of place on your coffee table.

The G30 sports an Intel Core Duo T2600 running at 2.17MHz with 2MB cache running at 667MHz. The Core Duo T2600 is perfectly suited to multimedia use in a notebook, as it's low heat and relatively low power, and includes optimisations specifically for multimedia content. The CPU is paired with 1GB of DDR2-667 in two slots. The system is capable of supporting up to 4GB. It runs on an Intel 945GM chipset, with an Nvidia GeForce 7600 Go with 256MB of dedicated memory. The GeForce Go 7600 is extremely well-suited to showing HD content and not too bad if you fancy an occasional 3D game.

Toshiba chose a 17.1in wide-screen LCD for the G30. The panel runs at a native 1,920 x 1,200, above HD spec for HD content playback. HD-DVD playback is amazing on the G30, and there's a noticeable difference from movies at regular SD resolution at 1080i. But, whether it's worth the price tag is up to you. For internal storage, the Toshiba includes two 100GB hard drives. Now, for a notebook, that kind of capacity is pretty amazing.

The G30 does include HDMI out, so you can use the notebook with a high-definition TV, for when a more traditional lounge-room setup is required.

Our second choice in this category is Sony's VAIO AR18GP. This huge 17in model is the current top of the range in the Sony lineup, and it's got the specs to match. Like the Toshiba, the Sony sports an Intel Core Duo processor T2600 running at 2.17GHz. The Sony includes 1GB of DDR2-667 and is based on the Intel 945GM chipset. Where it differs dramatically from the Toshiba is the inclusion of Blu-ray. The Sony VAIO includes a Blu-ray drive that's capable of reading and writing to Blu-ray disks (as well as standard DVD+RW and DL functionality). Internal storage on the VAIO makes use of two 80GB hard disk drives, for a total of 160GB storage. The drives can be RAIDed if desired.

The Sony features a 17in wide-screen monitor at a native resolution of 1,280 x 1,200 pixels. The screen has a nice, shiny coating and makes movies look great. The viewing difference when watching a film in Blu-ray and/or HD makes a big impression. Like the Toshiba, the Sony has an HDMI output for connection to a HD TV.

On the bench, both of the media centre notebooks scored pretty well. Under PCMark05 the Sony scored a very respectable 4,546, while the Toshiba scored a similar 4,521. Sony's VAIO AR18GP managed

2,854 points in 3DMark06, while Toshiba scored a very close 2,777.

Battery life was a clincher though, as both notebooks arguably couldn't get through a single optical

disk off the mains. Both lasted around the same amount of time with the Sony good for one hour, 37 minutes and the Toshiba G30 lasting for one hour, 39 minutes.

Ultimately, either of the notebooks will suit a multimedia buff down to the ground, as long as they understand the limitations of a portable media centre. Battery life is

still a little too low to be practical, and the sheer immensity of the notebooks means taking them with you wherever you go will constitute a real challenge. **UPC**

	LENOVO THINKPAD	HP COMPAQ NC6400	TOSHIBA PORTEGE R200	DELL INSPIRON 640M	ACER ASPIRE 5634 WLMi	HP PAVILION DV2040TX	SONY VAIO VGN-AR18GP	TOSHIBA QOSMIO G30
	BUSINESS NOTEBOOKS			BUDGET NOTEBOOKS			MEDIA CENTRE NOTEBOOKS	
CPU	Intel Centrino Core Duo T2400	Intel Centrino Core Duo T2400	Intel Pentium M 773	Intel Centrino Core Duo T2400	Intel T5600 Core Duo	Intel Core Duo T2050	Intel Core Duo T2600	Intel Core Duo T2600
RAM	512MB DDR2	512MB	768MB DDR2	1GB DDR2 SDRAM	1GB DDR2	1GB DDR2	1GB DDR2	1GB DDR2
Hard disk	80GB	80GB	60GB	100GB	120GB	80GB	160GB	200GB
Optical drive	None	Dual-layer DVD recorder	None	Internal 8x DVD +/-RW combination drive with dual-layer write capabilities	8x DVD Super Multi dual-layer	Super Multi 8x DVD±RW with dual-layer support	Blu-ray disc drive	HD-DVD ROM Super Multi dual-layer drive
Modem	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000	Internal 56k modem; integrated fast Ethernet 10/100/1000
Wi-Fi	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card	Intel PRO/Wireless 3945 dual-band 802.11a/g 54Mbit/s wireless mini card
Graphics adaptor	Integrated Intel Media Accelerator 950	ATI Mobility Radeon X1300/Intel Media Accelerator 950	Intel 915GSM	Integrated Intel Media Accelerator 950	Nvidia GeForce GO 7300 with 256MB TurboCache	Nvidia GeForce GO 7200	Nvidia GeForce GO 7600 GT	Nvidia GeForce 7600
Graphics memory	16MB shared	Up to 224MB shared memory	16MB shared	64MB shared	256MB	128MB of TurboCache	256MB	256MB GDDR3 dedicated; PCI Express 16x
USB ports	3	3	2	4	3	3	3	4
FireWire	1	0	0	1	0	1	0	0
Expansion slot	CardBus	ExpressCard	One type II PC Card slot; IRDA; SD slot	ExpressCard; 5-in-1 memory card	ExpressCard	ExpressCard	ExpressCard	One type II PC Card and Express Card; 6-in-1 card reader
Tuner	None	None	None	None	None	None	DVB-T; analogue	DVB-T; analogue
Video/monitor out	15-pin DSub	S-Video; 15-pin DSub	S-Video; 15-pin DSub	S-Video; 15-pin DSub	S-Video	S-Video; 15-pin DSub	HDMI; 15-pin DSub	HDMI; S-Video; 15-pin DSub
Audio out	Integrated sound; stereo headphones/speakers miniconnector	3.5mm	Mic and headphone port	Integrated sound; stereo headphones/speakers miniconnector	3.5mm	Headphone jack with SPDIF	Sound Reality; 3D audio; built-in stereo speakers	3.5mm; external mic port; stereo headphone port; S/P-DIF connectivity
Screen size	12.1in	14.1in	12.1in XGA	14.1in	15.4in WXGA	14.1in	17in	17.1in TruBrite Wide-screen UXGA
Screen ratio	4:3	Wide-screen	4:3	Wide-screen	Wide-screen	Wide-screen	Wide-screen	Wide-screen
Screen resolution	1,024 x 768	1,280 x 800	1,024 x 768	1,440 x 900	1,280 x 800	1,280 x 800	1,920 x 1,200	1,920 x 1,200
Battery capacity	8-cell	6-cell	6-cell	6-cell	6-cell	6-cell	3-cell	9-cell
Weight	1.67kg	from 2.1kg	1.2kg	2.4kg	2.7kg	2.43kg	3.8kg	4.6kg
	Long battery life	Multimedia performance	Slim and light	Great price; good battery life	Discrete graphics	QuickPlay media mode	Blu-ray	HD-DVD
	No optical drive	Bulky	No optical drive	Integrated graphics	Poor battery life	Horrible touchpad	Poor battery performance	Heavy
Verdict	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆

Live at the wireless

Stephen Withers takes a look at the range of wireless devices available to help you get rid of that cable clutter.

Australia's love affair with Wi-Fi is still in full bloom — and why not? Basic wireless routers are almost as cheap as chips; most notebooks and some desktops have Wi-Fi interfaces; and, unlike pulling cables through a building, wireless installation is a do-it-yourself job.

The long-awaited D-Link and Netgear Wi-Fi VoIP phones still hadn't been released when we tested this collection of products,

though we were able to get hold of a pre-release sample of ASUS' wireless Skype phone, along with a motley collection of other devices including routers, a printer and a media player.

Currently, manufacturers are busy delivering Draft 802.11n routers and adaptors. We originally doubted the wisdom of buying products that might not work with the final standard, but several factors have changed our mind.

The 802.11n is now unlikely to be finalised before early 2008, and Draft N delivers fast wireless today at affordable prices. Secondly, the Wi-Fi Alliance plans to certify the interoperability of pre-standard devices, though that program won't start until sometime in the first half of 2007.

This does suggest that the vendors are reasonably confident of interoperability. A second phase of the program will indicate

compatibility between devices certified as pre-standard and those that meet the final standard. Admittedly, neither aspect is much help if you want to buy with confidence right now. But that brings us to our final reason: ASUS has started what we hope will be a trend by guaranteeing to provide 802.11n compatibility for its Draft N router and adaptor once the standard has been settled, even if a hardware upgrade is needed.

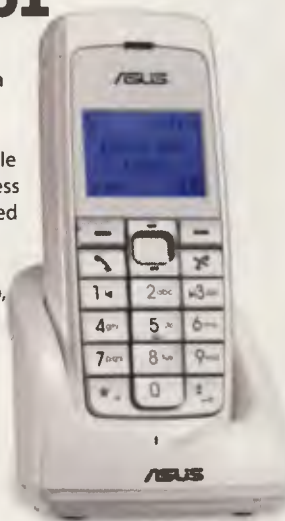
ASUS AiGuru S1

The AiGuru S1 is a Wi-Fi Skype handset, but it's important to realise that it is not a self-contained Skype client, just a device that works with Skype on your PC.

You must use the S1's USB Wi-Fi dongle even if the computer already has a wireless adaptor, and a second USB port is required for the automatic "pairing" process. A charger base is provided to house the phone and to keep its battery topped up, or you can recharge via USB. There's a speakerphone facility, and the ASUS software can act as an answering machine. You can scroll through the contacts list on the handset, easily calling places. Speech quality is adequate while you stay in range.

When you're not Skypeing, you can listen to music from Windows Media Player through the small speaker on the back of the phone. The sound quality is poor unless you plug in a pair of earphones or speakers, and only one playlist can be used at a time.

To our eyes, the pearl-white casing makes the S1 look cheaper than necessary.



CONTACT ASUS
PHONE 1300 278 788
ONLINE www.asus.com.au
PRICE \$129

✓ Use Skype when you're away from the computer.

VERDICT ★★★★★

✗ Looks cheap.

D-Link DI-624S

In a package smaller than some basic wireless routers, D-Link has added a pair of USB ports to allow the sharing of disks or printers. The disks can either be left open to anyone on the network, or you can create up to 12 user accounts and apply read-only or read-write access to as many as 12 shared directories. If you've used file sharing in Windows, you should have no trouble with this. Similarly, connecting to a shared printer from Windows is straightforward if you follow the instructions. Printing from Mac OS X and Linux is not supported by D-Link, but may be possible with LPR-compatible printer drivers.

With external storage, the DI-624S can also act as a WAN or LAN-facing web and FTP server, and as a UPnP AV server.

Getting back to basics, the DI-624S is an 802.11g device (up to 108MB/s with compatible adaptors) with four Ethernet ports, firewall, access controls (URL and domain filters, plus time-of-day restrictions), QoS, WPA and WPA2, DHCP and virtual server. All in all, a very useful device.

CONTACT D-Link
PHONE 1300 700 100
ONLINE www.dlink.com.au
PRICE \$199.95

✓ Many useful features in a small package.

VERDICT ★★★★★

✗ Print server only supported for Windows clients.



TP-Link TL-WR541G

Sometimes you want Barramundi; sometimes a piece of Flathead hits the spot. Despite the low price, this wireless router provides the essential features and in our testing it equalled the performance of more expensive routers. The specifications include a four-port 10/100 Ethernet switch, firewall, access controls, WPA2 authentication, DHCP, DMZ, Super G mode (for faster WLAN speeds with matching adaptors) and port triggering (essential for some applications).

The web-based configuration is easy to use, thanks partly to the ever-present help panel, though we would be happier if the setup wizard enabled wireless security instead of leaving the WAN wide open.

A few corners have been cut. The WR541G is bulkier than most wireless routers and it has a permanently attached antenna, but it's hard to complain when you look at the price.

If you can afford broadband internet, you can almost certainly afford the TL-WR541G as well (so you can share the connection between multiple computers or just to get the convenience of wireless).

..: CONTACT Anyware
..: PHONE 1300 269 927
..: ONLINE www.anyware.com.au
..: PRICE \$75

✓ Affordable; works well.

..: VERDICT ★★★★★

✗ Fixed antenna; no print or disk server.



Netgear RangeMax Next WNR834B

Designed for vertical mounting, the Netgear WNR834B doesn't look like a wireless router. This Draft N device has internal antennas to ensure they stay at the correct angle for optimum performance. The only external clue is a wireless indicator light on the front.

Features include four Ethernet ports, wireless card MAC filtering, SPI firewall, WPA/WPA2, port forwarding and triggering, automatic checking for firmware upgrades, site blocking by keyword or domain and service blocking. The setup wizard got stuck in a loop when we told it our connection doesn't require a login, but we were able to configure the router manually.

It set a new record on our speed test when used with the matching WN511B adaptor, but we found that a 270MB/s connection would sometimes drop back to 135MB/s (apparently due to interaction with neighbouring WLANs). More importantly, we saw 108MB/s or better throughout the premises. The range was good, but not the best.

..: CONTACT Netgear
..: PHONE 1300 361 069
..: ONLINE www.netgear.com.au
..: PRICE \$279

✓ Very fast short-range throughput; sleek lines.

..: VERDICT ★★★★★

✗ Didn't always sustain full speed, even at short range.



3Com 8760 access point

..: CONTACT 3Com
..: PHONE 1800 644 606
..: ONLINE www.3com.com.au
..: PRICE \$538

✓ Power over Ethernet for tidy installation.

..: VERDICT ★★★★★

✗ Some related settings are spread over two pages of the web interface.

While most homes and small businesses choose wireless routers, if you've already got an established network it might be easier to add a wireless access point instead.

The 3Com 8760 provides 802.11a as well as b and g. 11a operates on a different frequency and is less prone to interference, but it tends to be little-used in SOHO and SME environments. Another indication of the enterprise orientation is the way the 8760 can be configured as up to four virtual access points.

A wall-mounting plate is provided, and Power over Ethernet means only one cable is needed. If your switch doesn't provide PoE, the included power pack can be connected between the switch and the access point.

Even though the 8760 has a web interface with a setup wizard, we had problems with the configuration, despite trying multiple browsers running on various operating systems.

Specifically, our attempts to select WPA rather than WEP wouldn't stick. 3Com's technical support suspected our sample was faulty, but there wasn't time to obtain a replacement.

Our verdict gives 3Com the benefit of the doubt.



Canon MP800R

Some wireless routers include a print server, but a Wi-Fi-equipped printer can be located anywhere within range and eliminates one more cable from your setup. Canon's MP800R all-in-one also has the advantage that its scanner (which features a film adaptor) can also be used over the network. Windows and Mac drivers are provided, along with image editing and OCR software. Curiously though, the MP800R reported a less-than-ideal signal when the notebook next to it saw the router at full strength.

You can also print directly from memory cards or via the infra-red interface, and PictBridge printing is supported via the front-mounted USB port. The LCD panel lets you see the image and edit it (eg. red-eye removal and cropping) before printing. Strangely, there's no printed manual covering this standalone capability. Separate ink tanks for each colour are welcome, as are the dual paper trays and auto-duplex printing.

You could easily assume the prints were from the local mini-lab and, with this flexibility, an MP800R would be an asset to any home or small office.

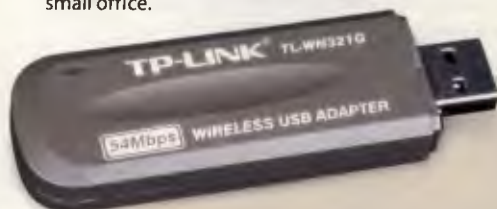


.. CONTACT Canon
.. PHONE (02) 9805 2000
.. ONLINE www.canon.com.au
.. PRICE \$599

✓ Flexible printing plus network scanning.

.. VERDICT ★★★★★

✗ Large footprint.



TP-Link TL-WN321G

The WN321G seems typical of most USB Wi-Fi adaptors: it's compact, gets quite warm in use and performs on par with the adaptor built into the Centrino notebook we used for testing — except that the USB extension cable provided by TP-Link makes it possible to position the dongle for best performance, which is something you can't always do conveniently with a notebook. A useful improvement might be to replace the ordinary USB cable with semi-rigid cables to hold the dongle in the optimum position.

We could only find Windows drivers on the CD or TP-Link's web site, although the box claims Linux is supported. It turns out that the WN321G uses a RaLink chip, and that company offers Mac OS X and Linux drivers, along with WHQL-certified versions of the Windows drivers (see www.ralinktech.com/supp-1.htm).

One minor concern is that the warranty seal is obtrusive on such a small device, and it was already slightly damaged. That could get worse with normal wear and tear, which could lead to problems if a claim was necessary.

.. CONTACT Anyware
.. PHONE 1300 269 927
.. ONLINE www.anyware.com.au
.. PRICE \$30

✓ Excellent value.

.. VERDICT ★★★★★

✗ Linux and Mac OS X drivers must be downloaded.

TP-Link TL-ANT 2405C antenna

If you can't quite get an adequately strong Wi-Fi signal in a particular location on your premises, consider fitting the router or adaptor (or even both) with a replacement antenna before you embark on a wholesale Wi-Fi upgrade.

You'll find that antennas come in two main types: directional and omnidirectional. As the name suggests, a directional antenna focuses the signal in a particular direction, while an omni gives more coverage by focusing on many directions.

The TL-ANT2405C is an omnidirectional model. It's hard to tell the size from the photo though, so we'll point out that it's 20cm tall.

The relatively small and light base means it isn't particularly stable, except on metal surfaces such as filing cabinets (thanks to the concealed magnet). A knuckle also allows mounting on any vertical surface.

When we tested it with the D-Link DI-6245 (see page 74), the antenna improved the signal strength by -2dB as measured by our

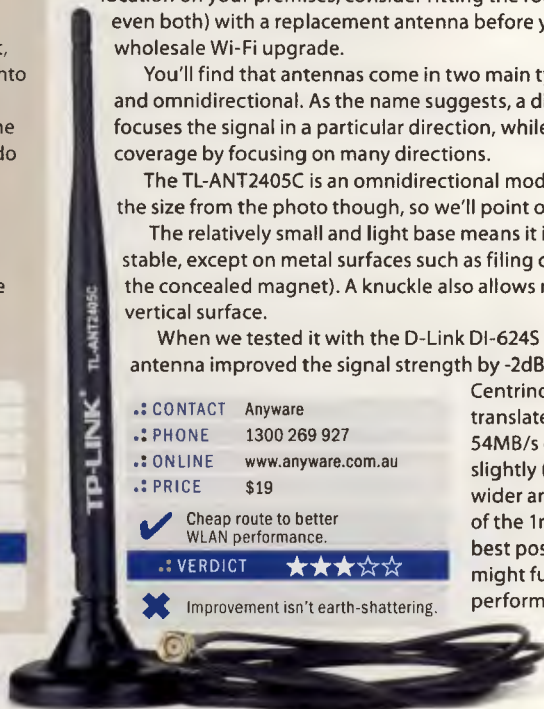
Centrino notebook, and this translated to getting full 54MB/s connections over a slightly (though usefully) wider area. Taking advantage of the 1m cable to find the best position for the antenna might further improve performance in some cases.

.. CONTACT Anyware
.. PHONE 1300 269 927
.. ONLINE www.anyware.com.au
.. PRICE \$19

✓ Cheap route to better WLAN performance.

.. VERDICT ★★★★★

✗ Improvement isn't earth-shattering.



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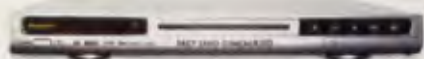


*Draft 802.11n Specifications refers to draft version 1.0 March 2006; Netgear makes no commitments to upgradeability to ratified 802.11n and upload times are based on file transfers between PCs on the same network.

Available from all good computer retailers
For more information go to www.netgear.com.au/next
Pre-sales technical support 1300 361 069

NETGEAR





Snazio Net DVD Cinema HD SZ1350

Snazio's Net DVD SZ1350 media player has a wealth of desirable features, including a DVD player, WPA and HD support, plus SCART, composite, S-Video, component and DVI interfaces (an HDMI adaptor is also optional). On the audio side, there's the choice of 5.1 analogue or optical (or co-ax digital).

The package includes server software for Windows and Mac and requires virtually no configuration, though a list of firewall ports that must be opened would help.

The Snazio SZ1350 connects to UPnP AV servers, will play files directly from USB storage devices and can access Flickr and other web services, as well as a list (managed by Snazzi) of internet TV and radio stations.

MPEG, DivX and WMV files are all supported, though the SZ1350 seems fussy when it comes to the exact flavour of AAC used in the audio tracks

..: **CONTACT** Micronica
 ..: **PHONE** (03) 9699 8844
 ..: **ONLINE** <http://micronica.com.au>
 ..: **PRICE** \$598

✓ Wide range of AV connectors; good server software.

..: **VERDICT** ★★★★★

✗ Wouldn't play recordings made from DTV tuners.

(so it wouldn't recognise the vodcasts we tried to play) and WMV compatibility is limited to version 9 and newer.

We'd prefer to see a progress indicator than a blank screen while movies are being buffered, but the SZ1350 is a great addition to any home entertainment system.

TrendNet TV-IP400W

TrendNet's pan-and-tilt camera is intended for security applications in homes and businesses. The camera itself is 5cm in diameter, with a small, manual focussing ring. Image quality is average. The mechanism — which allows panning through +/- 170 degrees and around 120 degrees (the specs say 135 degrees) of tilt — is noisier than we expected, though it wouldn't be noticeable in most industrial or business situations. A metal bracket is provided for mounting.

The quick installation guide wasn't much help until we did a hardware reset to restore the default IP address. The guide doesn't mention installing the IPView SE software as an alternative to using a web browser. We had mostly consistent success in controlling the camera from IPView SE, which can sound an alarm or start recording when motion is detected. Scheduled or manual recording is available.

The camera can email images, but we were unable to preset camera positions using any of the browsers we tried. We're not the only ones to experience this, but others report success.

..: **CONTACT** BAX IT
 ..: **PHONE** 1300 133 558
 ..: **ONLINE** www.trendnet.com.au
 ..: **PRICE** \$544

✓ Pan and tilt makes security cameras more useful.

..: **VERDICT** ★★★★★

✗ Apparent browser compatibility issues.



Linksys RangeBooster WRT54GR

The WRT54GR is an unusually compact wireless router measuring approximately 14 x 14 x 3cm, though its plugpack is larger than most we've seen recently. The basic specs include the usual four Ethernet ports plus wireless with RangeBooster technology promising twice the range and up to 35 per cent more throughput. Other features include an SPI firewall, WPA/WPA2 security, wireless MAC filtering, web filtering (eg. to block ActiveX), access controls (by time, URL, keyword or application) and port forwarding (and triggering). However, we don't like permanently mounted antennas due to the risk of possible breakage.

The setup wizard is straightforward to use. Perhaps we're becoming paranoid, but we'd prefer it if routers defaulted to "wireless off" if manufacturers insist on shipping the

routers with the wireless security disabled. As usual, the manual is a PDF file, but we're pleased to see that it's formatted for on-screen display.

We tested the router with a matching WMP54GR PCI adaptor, so it wasn't practical to determine the maximum range. Although, the combination did live up to Linksys' claimed throughput improvement over regular 801.11g in our short-range tests.

..: **CONTACT** Linksys
 ..: **PHONE** 1800 208 229
 ..: **ONLINE** www.linksys.com.au
 ..: **PRICE** \$189.95

✓ Compact; well-featured.

..: **VERDICT** ★★★★★

✗ Permanently mounted antennas.



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\$29.99
From MONTHLY INC. GST

Speed subject to but not limited to distance from local exchange, quality of phone line and customer's router/modem. ~600MB free, then 15c/MB, max download charge \$30; speed shaped when 10GB is reached. *Speed shaped when monthly download quota is reached. ^The specified VoIP capable modem/router must be purchased from TPG at the time of registration. Free call minutes: Apply to Adelaide, Brisbane, Canberra, Melbourne, Perth & Sydney and exclude calls to mobiles. Free calls are calculated with a minimum call time of 10 minutes and thereafter in 1 minute increments. TPG will debit customer's credit card \$20 for prepaid call credit to cover calls outside the free calls, e.g. international and mobile calls. Total minimum cost over 18 month contract term for Xlite plan is \$539.82 (includes \$0 setup but excludes modem cost). Prices subject to change without notice. Full terms and conditions apply. Check TPG website at www.tpg.com.au for details and availability. TPG Internet Pty Ltd 65 Waterloo Rd. North Ryde NSW 2113. ABN 15 068 383 737.

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Call 1300 659 412 or visit www.tpg.com.au/shdsl for more details





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ONLINE www.seagate.com
PRICE \$799

- ✓ Huge capacity.
- ✗ No networking.

External storage capacity just keeps expanding. Seagate's latest one-touch backup drive comes with an astonishing 750GB of storage space, connected over USB or IEEE 1394. Its other major selling point is the BounceBack Express software. Install this and you have a quick and easy backup scheduling system designed to work with the drive. With such a capacity you'll stay backed up for some time. Our only concern is that as capacity increases, the chance to lose a lot of data (if a drive fails) does too.



ASUS X1600 Pro HDMI

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$229

- ✓ Low-profile HDMI card.
- ✗ No S-Video or DVI.

While there has been much talk about HDMI on PC graphics cards, little more than engineering samples have been seen so far. The first wave of production cards has begun to emerge in anticipation of Vista. ASUS has chosen ATI's Radeon X1600 Pro to debut its HDMI strategy. A half-height model with a small fan, it not only outputs in HDMI but also has a D-Sub plug and a SP/DIF out. The mid-range X1600 chip is ageing, but still packs all that you'll need for HD video consumption via your PC.



Gigabyte 7600GS HDMI

CONTACT Synnex
ONLINE www.synnex.com.au
PRICE \$249

- ✓ Passively cooled for quietness.
- ✗ Lacks audio outputs.

This low end of Nvidia's high-end 7600 product line has one less vertex shader and four less pixel shaders than the GeForce 7600GT. Apart from this, the cards run at the same core and memory speeds. Essentially, these are 7600GT chips that didn't make the grade. Rather than junk the entire chip, Nvidia can disable the wonky shading unit and deliver a slightly less-powered but almost as competent product. It means that while performance will be slightly less, the price point is incredibly attractive.



Gigabyte GV-NX76G256D-ZL-RH

CONTACT Gigabyte
ONLINE www.gigabyte.com.tw
PRICE \$220

- ✓ Affordable DX9 graphics.
- ✗ Slower than others similarly priced.

Gigabyte has gone down the Nvidia path for its HDMI video card. The GV-NX76G256D-ZL-RH uses the GeForce 7600GS GPU for rendering. It is a full-height card, but makes up for it with a passive cooler — the effectiveness of such a cooler is highly dependent on the airflow inside your case. The card features HDMI, DVI and S-Video outputs, but an adaptor can be used to change the HDMI port to a second DVI. That said, the main selling point of the card is HDMI — if you want plain DVI look at a normal card.



Corsair HX620W

CONTACT Altech
ONLINE www.altech.com.au
PRICE \$349

- ✓ Modular cabling.
- ✗ Pricey.

While Corsair is one of the biggest names in memory, it has also been aggressively branching into new areas of enthusiast computing. We've seen all-in-one watercooling kits before, but the HX620W marks its first foray into power supplies. This model is 620W (there is also a 520W) and features modular cabling. This allows you to only attach the power cables you need, saving on internal clutter. The five-year warranty is just icing on the cake, and we're keen to see what else Corsair has up its sleeve.

ASUS M2N32N WS Pro

CONTACT ASUS

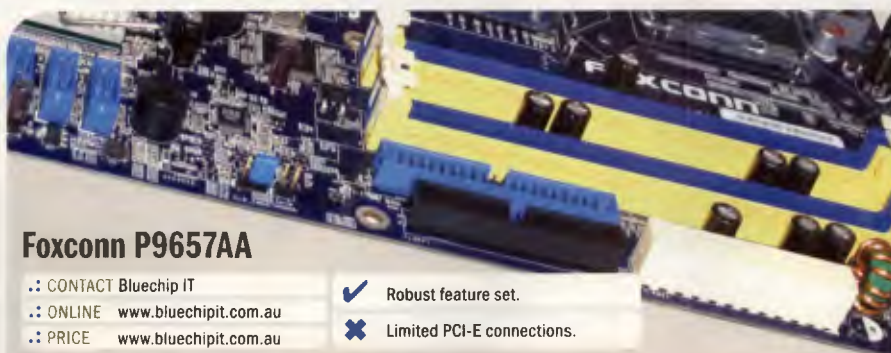
ONLINE www.asus.com.au

PRICE \$450

- ✓ Workstation features.
- ✗ Cluttered PCI-X and x16 PCI-E slots.

Based upon Nvidia's high-end nForce 590 SLI chipset, the ASUS M2N32N WS Pro is designed for workstation users rather than home enthusiasts. It bears a similar feature set to the non-Pro versions, with dual PCI-E x16 slots, nine SATA, one eSATA and two parallel ATA channels. It also sports dual-LAN and passive heatpipe cooling. The main differentiator is that it has two PCI-X slots. These sit between the two x16

graphics slots, which means a lot of graphics cards will block at least one of the ports (and we wouldn't recommend using a PCI-X card if you have SLI graphics). Another concern is that three SATA ports sit where the tail end of the video card goes. An annoying trend we've noticed; it makes drive installation and access a pain. A strong product for a workstation user, but there are better for home enthusiasts.



Foxconn P9657AA

CONTACT Bluechip IT

ONLINE www.bluechipit.com.au

PRICE www.bluechipit.com.au

- ✓ Robust feature set.
- ✗ Limited PCI-E connections.

Lacking the proliferating PCI-E slots and fancy heatsinks of other P965-based motherboards, Foxconn's board has a good feature set. For your storage needs it has six SATA ports, one eSATA port and a single parallel ATA channel via a third party controller (the P965 does not natively support PATA; however, optical drive

manufacturers have so far shunned SATA). As the P965 chipset lacks CrossFire support, expansion slots are limited to a single PCI-E x16 alongside a x4 and x1 connector. This leaves room for three PCI slots on the board. Not as flashy as other boards it is a robust, feature-rich offering for those moving to Core 2 Duo.

Tagan 1,100watt PSU

CONTACT Actiontec

ONLINE www.actiontec.com.au

PRICE \$459

- ✓ Enough power for any extreme PC.
- ✗ Heavy, non-modular cabling.

Designed for the power needs in quad-SLI systems, this is a well-engineered PSU. It reeks of quality, from the faux-leather satchel that it ships in to some of the most robust power plugs and cabling we've seen. The quad-SLI focus is evidenced by the four separate PCI-E graphics connectors, which sit alongside an impressive 10 SATA power plugs. There are also four 4-pin molex plugs and adaptors to turn the SATA plugs to molex. Unlike other PSUs, it comes with both a 4-pin and 8-pin ATX12V plug. It supports both 24-pin and 20-pin ATX power. Using this on anything but a top-

end system is overkill. Our only real disappointment was in the lack of modular power cables; however, we'd trade reliability and sheer power for this convenience anyday. The last thing to note is that it's heavy, thanks largely to the huge heatsinks keeping the power generation in check. It's unavoidable, but of note if you lug your system around a lot.

StreetPilot c510



nüvi 660



nüvi 310



The most comprehensive, portable and easy-to-use range of GPS Street Navigators available ...

nüvi models shown include; MP3 player and Bluetooth hands free phone kit.

All models shown include; 'Text-to-speech' which announces street names, POIs and addresses rather than simple "Turn left, turn right".

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www.gme.net.au

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ADELAIDE (08) 8234 2633

MELBOURNE (03) 9798 0988
PERTH (08) 9455 5744
AUCKLAND (09) 274 0955

apc



Product Information

1 Finepix S6500fd RRP \$629

Even without its revolutionary face-detection technology, the FinePix S6500fd is a formidable package. Combining the highly-acclaimed 28-300mm (equiv) Fujinon zoom lens and the award-winning picture quality of the 6.3 million pixel 6th Generation Super CCD, this is a camera capable of stunning picture quality in all shooting conditions. However what really makes the S6500fd stand out from the crowd is its ultra-fast face detection technology. For families, portraiture and any other form of people photography, this camera can tell the difference between a vase of flowers and a human face, meaning that your people photos will be sure-fire winners every time. www.fujifilm.com.au

2 Corel® Paint Shop Pro® Photo XI RRP Full version \$199 Upgrade \$139

Corel Paint Shop Pro Photo XI is the ideal choice for people who want extraordinary photos. Filled with one-of-a-kind photo tools sure to please anyone with a digital camera, a built-in photo organizer, and a Learning Center to help first time users get started, it's the easiest way to get professional-looking photos - fast! Visit www.corel.com.au

3 GARMIN nuvi 660 RRP \$1,199 inc GST

This new navigator from Garmin offers a wide touch screen interface with automatic route calculation and turn-by-turn voice prompted directions utilising the "Text-to-Speech" feature which announces streets by name. Also included is a Bluetooth hands free phone kit and integrated FM transmitter so MP3's, directional voice prompts and phone conversations can be directed via the vehicles speakers www.gme.net.au

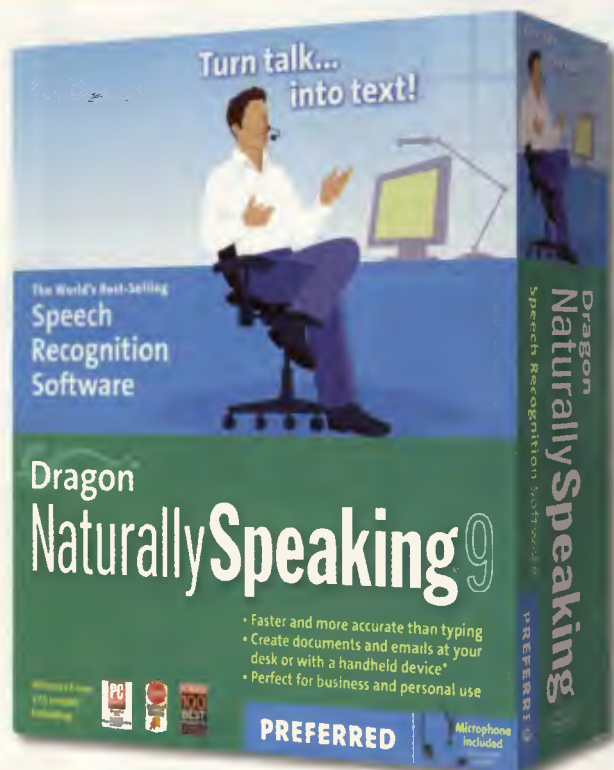
4 MSI Computer L740 and L745 RRP \$2,299.

The L740 and L745 are MSI's latest 17 inch widescreen Notebooks using Intel's latest dual core technology. The L740 and L745 deliver exceptional graphics processing, wireless capabilities, Digital TV viewing and ultimate multimedia sound experience all packaged into an award winning design. For more information please visit www.msicomputer.com.au



Gadgets to prime you up for 2007

The coolest items around



Product Information

5 Dragon NaturallySpeaking(r) RRP: \$399.95

Preferred gives users the power to create documents, reports, emails and more - all by speaking! Fast, easy and amazingly accurate. Use your voice to dictate and edit in just about any Windows(r) application. You can even dictate into a handheld device when you're away from your PC, or use a Bluetooth microphone!

<http://australia.nuance.com/naturallyspeaking/> or call 1300 550 716

6 Endigo is a revolutionary new Bluetooth streaming audio device. RRP \$199.00

Provides extreme levels of audio quality and an impressive low frequency response. Endigo comprises a built in directional microphone supporting auto-switching from music mode to telephone mode. Endigo is perfect for online games, mobile phone, and plasma TV users. Buy on line quoting reference code "BSA PCU" to receive 10% of the retail price.

Visit www.ritequip.com.au

7 Rainbow 6 Las Vegas RRP is \$119.95

Rainbow 6 operatives take to the streets of Las Vegas where a terrorist siege in "Sin City" threatens to take world terrorism to uncontrollable heights. The next game in the Rainbow series offers revolutionary next-generation technology and a new level of squad-based realism. A must buy for any PC or 360 owner. Available from Electronics Boutique, JB Hifi, Harvey Norman, Myer, K-mart, Target, Games Wizards www.rainbow6game.com

apc



9



8



Product Information

8 Blow-up your iPod with ViewSonic's ViewDock

The ViewDock is the world's first "Made for iPod®" LCD display with an integrated iPod dock, making it the ultimate in multimedia to rock your digital universe. By simply inserting your iPod into the dock you can enlarge your viewing experience by more than 65 times, play music through the stereo speakers and subwoofer, plus more. For pricing go to www.viewsonic.com.au

9 Graphire Bluetooth from Wacom RRP \$449 plus GST

With Wacom's pen tablet and pen display, users will enjoy intuitive new Vista-enabled note taking resources, handwriting recognition and time-saving gesture control options. Wacom's Graphire Bluetooth will enable software developers and other hardware manufacturers to integrate compelling pen and touch input capabilities into future products. Whether you are a professional presenter or business person wanting to add greater impact to your presentations, the Graphire Bluetooth is the perfect choice for you! Go to www.wacom.com.au and click on where to buy to find your closest point of purchase for all Wacom Products.

10 Lexar JumpDrive® FireFly 1GB RRP \$69.95

Lexar JumpDrive FireFly is an ultra-small USB flash drive with huge personality – comes in 5 stylish colours, has a tethered cap for security and a cool blue tail light that blinks during transfer. Choose your colour & capacity & hook it to your keyring. For more information www.lexar.com/jumpdrive/index.html

11 Lexar JumpDrive® Lightning 2GB RRP \$139.95

Lexar JumpDrive® Lightning is a premium Hi-Speed USB flash drive that offers lightning-fast data transfer rates, housed in a stylish stainless steel case. Includes PowerToGo™ portable Windows® applications platform & Security software. For more information www.lexar.com/jumpdrive/index.html



10



Gadgets to prime you up for 2007

The coolest items around



13



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14



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Product Information

12

DLINK DPH-C160S Dual Mode Cordless VoIP phone RRP \$269.00

Make and receive VoIP and regular telephone calls on the same phone with D-Link's NEW DPH-C160S DECT dual mode cordless VoIP telephone. Conditions apply. Available Now. www.dlink.com.au

13

Claritas CTM-101 Media Centre RRP \$2099.00

The new Claritas CTM-101 Media Centre is about the same size as a DVD player yet features dual HDTV tuners, dual core processor and a DVD burner. For more information www.claritas.com.au

14

AIGO F529 MP3/WMA Playback Speaker System RRP \$189.00

This compact and sleek designed 1GB, AC powered, high fidelity, 300° Omnisphere Speaker System has multiple built-in music inputs (SD/MMC slot, AUX-in); unique top-sitting illuminator with 4096 colours; 5-watt 2.5" high BTL amplifier and 5-watt output with dynamic bass compensation. With it's small footprint, this speaker system will fit anywhere. Visit www.mwave.com.au or 1300 727 446

BEST TECH



APC's independent reviewers point to the best technologies in the top-selling product categories each month. We only change products when a better one comes along. What you see here is the best technology available on the market.

Best Tech is edited by William Maher. Contributors to the APC Best Tech guide: Seamus Byrne, Dan Chiappini, John Gillooly, Ashton Mills, Nick Race, Tony Sarno, Adam Turner, Dan Warne and Stephen Withers.

The **Best Overall** award is for products we believe are the best, regardless of price.

The **Best Value** award is for those which offer a good combination of features for a reasonable price.

DESKTOP PCs – GENERAL USE

Enspire Digital Vitesse XP2

CONTACT Enspire Digital PHONE 1300 880 070
ONLINE www.enspiredigital.com.au PRICE \$2,687 (our spec)



We specced this machine on the Enspire site, with the right mix of features for work and play. Under the hood is Intel's flagship Core 2 Duo E6600 (2.4GHz) with 1GB of RAM, a Samsung 19in 8ms screen and GeForce 7600GT graphics card. Classy touches include the Logitech MX3000 Cordless Desktop set and Logitech 5.1 speakers.

PC Quest M2 Core

CONTACT PC Quest PHONE 1300 550 118
ONLINE www.pcquest.com.au PRICE \$1510.10 (our spec)



When it comes to cheap, do-everything machines, there's a lot of rubbish out there from the big brands. Not so with PC Quest. This system has a dual-core Athlon 64 X2 3800+ on AMD's new AM2 platform, plus 1GB of RAM and a 19in LCD. Also, the ATI Radeon x1600 Pro is a capable card for occasional gaming.

DESKTOP PCs – SMALL BUSINESS

Dell OptiPlex 745 mini tower

CONTACT Dell PHONE 1800 812 393
ONLINE www.dell.com.au PRICE \$1,419 (inc. \$100 discount)



With Intel's new Core 2 Duo onboard, this represents the top of the line in a business computing platform. Key features include Core 2 Duo E6300 (1.8GHz) chip, 1GB DDR2 RAM, a 160GB Serial ATA hard drive, and 3-year next-business-day on-site warranty. Price includes 17in LCD monitor (analogue).

Dell OptiPlex GX520 mini tower

CONTACT Dell PHONE 1800 812 393
ONLINE www.dell.com.au PRICE \$1,269 (inc. \$150 discount)



You'll get cheaper with Pentium 4 or Sempron, but we think it's time for dual-core. This Pentium D box beats big names like Lenovo for price (though ASI Solutions comes close). Our spec includes Pentium D 820 CPU, 512MB RAM, stable image and Dell OpenManage IT Assistant.

MOTHERBOARDS

Intel D975XBX

CONTACT Intel PHONE N/A
ONLINE www.intel.com PRICE \$315



This board is one of the finest you can get for the Core 2 Duo processors. It supports SLI but, thanks to the AMD/ATI buyout, it's also likely to be the last Intel board to officially support CrossFire graphics. While it lacks hardcore tweaking options, it shines when it comes to stability and performance.

Foxconn P9657AA-8KS2H

CONTACT Foxconn PHONE N/A
ONLINE www.foxconnchannel.com PRICE \$165



This board only has a single x16 PCI Express slot, so it can't be used for CrossFire or SLI. However, it also has one x1 and one x4 PCI slot ready for the next generation of PCI-E expansion cards. Combine this with HD audio, five SATA and one eSATA port and you've got top value for money.

VIDEO CARDS

Nvidia GeForce 7950 GX2

CONTACT Nvidia
ONLINE www.nvidia.com

PHONE N/A
PRICE Approx. \$800



NEW ENTRY

This monster card combines two graphics chips connected via an internal PCI Express bridge. What this allows for is SLI-level performance out of a single card, while also giving you the option of using two of these on a suitable motherboard for truly obscene performance levels. Only serious gamers need apply.

Nvidia GeForce 7600 GT

CONTACT Nvidia
ONLINE www.nvidia.com

PHONE N/A
PRICE Approx. \$210



UPDATED

Nvidia's recently released mainstream card, the GeForce 7600 GT raises the bar for price/performance. With significant performance boosts over the last-generation 6600 GT card, the 7600 GT also comes with support for SLI, allowing performance to spiral even higher.

LCD MONITORS

LG M203WX

CONTACT LG
ONLINE www.lge.com.au

PHONE 1800 725 375
PRICE \$1,199

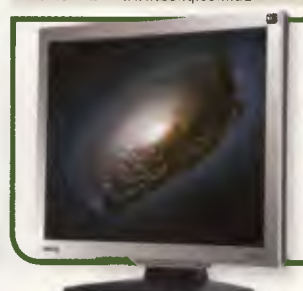


APC's pick from our last LCD Labs roundup is this 20in stunner. A great mix of features, connectivity and picture quality, this unit proved to be a good all-round display in our testing. You get D-sub, DVI and USB ports — plus, it's one of the few we looked at with a multiformat card reader.

BenQ FP71G+

CONTACT BenQ
ONLINE www.benq.com.au

PHONE (02) 9352 8800
PRICE \$369



Proof that good things come in small packages, this 17in LCD screen manages to stay at a low price point while still delivering an 8ms response time. There's no DVI, but this 1,280 x 1,024 monitor will satisfy most run-of-the-mill computing jobs.

OPTICAL DRIVES – DVD

Sony DRU-820

CONTACT Sony
ONLINE www.sony.com.au

PHONE 1300 137 669
PRICE \$120



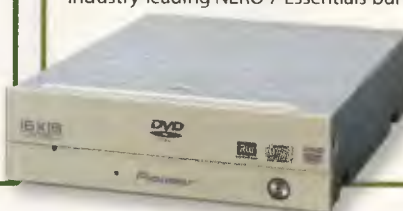
Sony's DRU-820 internal double-layer DVD burner is a ripper (if you'll excuse the pun), with support for DVD-RAM, DVD+/- and double-layer discs. It ships with Nero 6.6 and can write DVDs at up to 16x. A one-year

warranty is included and the drive ships with both black and beige face-plates. An external model is also available for \$239.

Pioneer DVR-A11XLA

CONTACT Pioneer Electronics
ONLINE www.pioneeraus.com.au

PHONE 1800 338 439
PRICE \$99



Now on its 11th-generation release, this DVD burner is a steal at \$99. Industry-leading NERO 7 Essentials burning software is included and the drive itself offers a zippy 16x burn speed. The Pioneer drive is an excellent upgrade for an ageing system and a solid alternative to Sony's model.

INTERNAL HARD DISKS

Seagate Barracuda 7200.10 750GB

CONTACT Seagate
ONLINE www.seagate.com

PHONE (02) 9891 0087
PRICE \$980



It may not be on the shelves when this issue of APC hits the streets, but it won't be too far off. This 750GB whopper scored well in our benchmarks and — just think about it — you only need two of these for 1.5TB of storage! It's available in PATA and SATA, but who uses PATA these days?

Seagate Barracuda 7200.10 320GB

CONTACT Synnex
ONLINE www.synnex.com.au

PHONE 1300 100 100
PRICE \$225



320GB is the new black. Seagate's Barracuda 7200.10 is quiet and packs plenty of punch, but be careful in tight enclosures: it puts out a load of heat. Though the RRP for this drive is \$225, they can be found on the street for less than \$200. The 16MB cache model is fast enough for most uses, but if you're serious about video editing, splurge for a 10,000rpm drive.

EXTERNAL HARD DISKS

Maxtor OneTouch III Turbo Edition

CONTACT Maxtor
ONLINE www.maxtor.com.au

PHONE (02) 9369 3662
PRICE \$1,199 (1TB)



Power users looking to store files safely are advised to check out this external hard disk. The device offers FireWire 800, Firewire 400, USB 2.0 interfaces and up to 1TB of storage. RAID 0 and 1 arrays are supported and it ships with desktop backup software — no worries about trashed files.

Western Digital My Book

CONTACT Synnex
ONLINE www.wdexternal.com.au

PHONE 1300 100 100
PRICE \$299



With more than double the capacity of our previous best value drive (which was also WD) at only a slightly higher cost, here you get 250GB of storage in a classy black enclosure equipped with Google Desktop software for quick file finding. It's got USB 2.0 (and the smart power-on/off feature is a nice touch).

USB ULTRA-PORTABLE

Lexar Jumpdrive Lightning

CONTACT Lexar
ONLINE www.lexar.com.au

PHONE (02) 9034 8625
PRICE \$119.95 (1GB)



This ultra-quick Lexar functions like any other memory key, but includes a PowerToGo feature — you can install applications to the drive that can be run on any PC. It doesn't make any changes to the host OS and stores files locally on the key, so you can take it all with you when you leave; ideal for students or support staff. Support for 256-bit AES encryption is also included.

Sandisk Cruzer Micro

CONTACT Sandisk
ONLINE www.sandisk.com

PHONE 1800 793 652
PRICE \$99.95 (1GB)



Sandisk's Cruzer Micro is a top-notch USB memory key. The simple design includes a retractable USB connector and ships with a lanyard. The diminutive key includes the U3 software platform that allows users to install custom apps to the key — just like Lexar's PowerToGo feature. It's a touch slower than its competitor, but it's also \$20 cheaper for the 1GB capacity, and a good option for those that favour value over raw speed.

NAS / MEDIA

Iomega StorCenter Wireless Network 1TB

CONTACT Iomega
ONLINE www.iomega.com.au

PHONE 1800 466 342
PRICE \$1,999

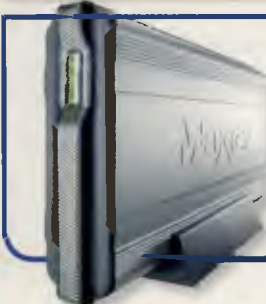


The Iomega StorCenter provides a nominal terabyte of storage that can be configured as RAID 0, 1 or 5, plus Gigabit Ethernet, 802.11g wireless (WEP or WPA) and support for UPnP AV media players. Two USB ports enable connection for external drives, a shared printer or a digital camera.

Maxtor Shared Storage Plus

CONTACT Maxtor
ONLINE www.maxtor.com.au

PHONE (02) 9369 3662
PRICE \$399-\$699 (200GB-500GB)



Maxtor's Shared Storage Plus provides 200GB to 500GB of network storage, with the ability to stream media files to UPnP AV media adaptors — without the intervention of a PC. USB ports allow for connection of printers and external disk drives for additional storage.

SERVERS — SMALL BUSINESS

PowerEdge 2900

CONTACT Dell
ONLINE www.dell.com.au

PHONE 1800 812 393
PRICE From \$3,487



This Dell is a beauty. It's dual-socket, dual-core and sports up to two of the new Intel Woodcrest Xeon. The default config features a single Xeon 5140 at 2.33GHz with 1,333MHz FSB, backed by 2GB of DDR2 533 FB DIMMS and an 80GB SATA II hard drive. Dell offers a 3-year on-site warranty. Hugely upgradable, it has 12 FB DIMM slots and supports 48GB of RAM, eight internal SAS or SATA drive bays and can be racked.

HP ProLiant ML110 G3 SMB Bundle

CONTACT HP
ONLINE www.hp.com.au

PHONE 1300 305 017
PRICE \$1,499



Not a real powerhouse, but the price can't be beaten. This unit is a single CPU Pentium 4 3.0GHz with 1GB of RAM and two 80GB hard disk drives. Though it won't break any speed records, it will suit a small business's needs. The server is bundled with Microsoft Small Business Server 2003 Standard Edition.

NOTEBOOKS – MEDIA CENTRE

Sony Vaio VGNAR18GP

CONTACT Sony
ONLINE www.sony.com.au

PHONE 1300 137 669
PRICE \$5,499



It's not cheap, but if you're looking for one of the first Blu-ray-equipped notebooks, then this is it. You can burn and read the next-gen optical format (very slowly, mind you), as well as multiformat DVDs. Other highlights include the 160GB HDD, 3.8kg weight (lighter than Dell XPS M1710) and 17in-wide TFT.

Toshiba Qosmio G30

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au

PHONE 13 30 70
PRICE \$4,299



Generous specs combined with an analogue/digital TV tuner and Media Center really does make this a portable entertainment device (if 4.6kg doesn't make your back cry). This puppy has enough graphics power to not only drive the gorgeous 17in LCD, but also to make current games look great.

NOTEBOOKS – BUSINESS

Lenovo ThinkPad X60

CONTACT Lenovo
ONLINE www.lenovo.com/au

PHONE 1300 557 073
PRICE From \$2,699



Business is all about portability — after all, there's no point having a notebook if you're hopping between power points all day. At 1.67kg and shipping with a better than average 8-cell battery, the X60's eight and a half hour run-time on a single charge will keep you going all day long.

Dell Inspiron 6400

CONTACT Dell
ONLINE www.dell.com.au

PHONE 1800 812 393
PRICE \$1,499



It's impressive seeing Intel's latest Core Duo processor platform in a mid-sized package under \$1,500. Dell hasn't skimped heavily on other key features either, including a 15.4in wide-screen LCD. The Dell will play DVDs and burn CDs, but it won't burn DVDs. Battery life is rated for three hours and the unit weighs 3kg.

NOTEBOOKS – ULTRA-PORTABLE

Toshiba Libretto

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au

PHONE 13 30 70
PRICE From \$3,499



You had better make sure to look closely when shopping for a notebook or you might miss this one. At just 7.2in, the display is tiny (and the keyboard matches). Don't be fooled by the chassis though, there's plenty of grunt inside (and you can throw it into your backpack with room to spare).

Sony VGNTX27GPT

CONTACT Sony
ONLINE www.sony.com.au

PHONE 1300 138 246
PRICE \$3,699



The bigger brother of the TX17GP, we were blown away by its crisp display, tiny form factor and battery life. Able to run over eight hours on a single charge (and with an optional extended battery, there's no need to worry if you forget your charger).

SMARTPHONES

BlackBerry 8707G

CONTACT Optus
ONLINE www.optus.com.au

PHONE 1300 301 937
PRICE \$999 outright (or plan options)



This new BlackBerry has the basics perfected. A big, bright screen, fine-tuned QWERTY keyboard, 3G wireless that can be used as a laptop modem and the BlackBerry email service. Once you get the hang of the keyboard shortcuts, you can whip around the 8707G's interface like lightning.

Nokia E61

CONTACT Nokia
ONLINE www.nokia.com.au

PHONE 1300 366 733
PRICE \$749



It's hard to fault Nokia's 3G "BlackBerry Killer": it has the comfortable BlackBerry form factor with QWERTY keyboard and fits comfortably in your pocket — plus, you can take your pick of push email service. There are two other killer features: inbuilt Wi-Fi and Nokia's new web browser.

ADSL2+ MODEM/ROUTERS

Billion 7404VGP

CONTACT PC Range
ONLINE www.billion.com.au

PHONE (08) 8322 9544
PRICE \$299



It's hard to beat on features and price. For your \$299, you get one of the fastest ADSL2+ modems in terms of actual throughput (average over 1km and 3.5km phone line length), robust 802.11g wireless networking (supporting WPA2 security) and four Ethernet ports. There's inbuilt VoIP and PSTN passthrough (if the VoIP ever fails).



Billion 7300G

CONTACT PC Range
ONLINE www.billion.com.au

PHONE (08) 8322 9544
PRICE \$169



Despite its low price, the Billion 7300G managed to trump all the other modems in our most recent ADSL2+ Labs Challenge on average speed across 1km and 3.5km line lengths. It includes four 10/100 ports as well as 802.11g (including WEP, WPA and WPA-2 security). The modem has configurable Quality of Service, too.



WIRELESS APs AND ROUTERS

Linksys Wireless-N Broadband Router WRT300N

CONTACT Linksys
ONLINE www.linksys.com.au

PHONE 1800 678 808
PRICE \$279.95



We're still not convinced that Draft N devices are the best in the long term, but if you want more speed now, at least it gives you a chance of compatibility between brands and some hope of a firmware upgrade. The WRT300N has the best range among the Draft N routers we've tested so far.



NEW ENTRY

TP-Link TL-WR541G

CONTACT Anyware
ONLINE www.anyware.com.au

PHONE 1300 269 927
PRICE \$75



In our tests the TL-WR541G delivered solid connections at the same range as routers costing much more. It has the usual four-port 10/100 Ethernet switch plus regular features such as a (relatively simple) firewall, access controls, WPA2 authentication, DHCP and port triggering.



NEW ENTRY

VOIP ADAPTORS

Netcomm V300

CONTACT NetComm
ONLINE www.netcomm.com.au

PHONE (02) 9424 2070
PRICE \$199.10



Low upstream speeds on most broadband connections mean QoS support makes a big difference to how you sound during a VoIP call. In APC's testing, the V300 delivered good voice quality with minimum impact on data traffic. It also lets you use one handset for VoIP and PSTN calls.



Netcomm V100

CONTACT NetComm
ONLINE www.netcomm.com.au

PHONE (02) 9424 2070
PRICE \$128



Connect the V100 to a power point, your network and a handset, and you're in business. Available as a generic model or preconfigured for certain VoIP providers, which makes it as simple as it gets. Some people prefer a box that allows more diddling around, but we're attracted to the simplicity.



GPS DEVICES

TomTom GO 910

CONTACT TomTom
ONLINE www.tomtom.com

PHONE N/A
PRICE \$1,179



Feature-crammed, with a 480 x 272 pixel TFT LCD touchscreen, 3D navigation software, maps of three continents on its 20GB hard disk and countless route options and points of interest. Best of all is its lightning-fast reaction time, immediately picking unexpected route changes and aligning maps quickly.

New TomTom ONE

CONTACT TomTom
ONLINE www.tomtom.com

PHONE N/A
PRICE \$699



A lighter and slimmer version of the old TomTom ONE, with the same-sized 320 x 240 pixel colour touchscreen. It is a great entry-level device with many of the GPS navigation features of the more expensive TomTom models. Weighing 174g, you can stick it in your pocket when you take it out of the car.

DIGITAL STILL CAMERAS

Canon PowerShot G7

CONTACT Canon
ONLINE www.canon.com.au

PHONE 13 13 83
PRICE \$899



Here is an excellent example of the power you can get without dropping all your dough on a DSLR. Short of interchangeable lensing, the G7 still delivers excellent manual controls and a wealth of features unmatched by most of the non-SLR digital market. Very big prints are viable with its 10MP resolution.

Panasonic Lumix DMC-FX01

CONTACT Panasonic
ONLINE www.panasonic.com.au

PHONE 13 26 00
PRICE \$549



The Lumix camera range features excellent Leica lensing, and the FX01 delivers a wide-angle 28mm lens with a zoom range out to 102mm. For the money, you're getting 6MP resolution along with some first-rate optical stabilisation. The 2.5in LCD is very bright.

DIGITAL VIDEO CAMERAS

Panasonic AG-HVX202EN

CONTACT Panasonic
ONLINE www.panasonic.com.au

PHONE 13 26 00
PRICE \$9,900



The first of the next-generation pro-grade cameras (and inside \$10K). Record in DV or various DVCPRO formats, with support for 720p and 1080i HD. With support for DV tape and the new P2 flash media format, as well as pro audio features and new lensing technology, this is nova hot right now.

Sony HDRSR1

CONTACT Sony
ONLINE www.sony.com.au

PHONE 1300 137 669
PRICE \$2,499



Finally, a hard drive handycam which delivers high definition that goes beyond HDV. The new AVCHD format is excellent, with variable bit rates to suit different shooting needs. Plus, there's great buffer features and hard disk shock protection to ensure a long life for your investment.

PROJECTORS

Optoma HD72

CONTACT Amber Technology
ONLINE www.ambertech.com.au

PHONE 1800 251 367
PRICE \$4,750



Optoma's outstanding DLP-based projector offers full 720p HD resolution for less than \$5,000. The 3.1kg unit produces a clear, consistent image with controls to adjust brightness, contrast, image shift and keystone, through dedicated buttons on the remote control. This saves hunting through menus to make changes to picture properties and helps the viewer adjust the image to match each movie.

Toshiba S8 DLP

CONTACT Toshiba
ONLINE www.toshiba.com.au

PHONE (02) 9887 6000
PRICE \$1,999



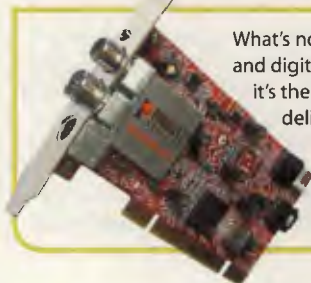
If you're after a basic projector to handle some gaming, movies and web surfing, the S8 is a safe bet. 800 x 600 pixel resolution, 2,000:1 contrast ratio, and composite, S-Video and VGA inputs. Better still, the maximum 3,000-hour (eco mode) lamp life means you won't have to buy pricey bulbs every few months.

TV TUNERS

Pinnacle PCTV 310i

CONTACT Lako Pacific
ONLINE www.lakopacific.com

PHONE (03) 9455 7444
PRICE \$199.99



What's not to like about the 310i? With analogue and digital TV tuners (plus FM radio) on one card, it's the complete package. The software delivers PVR features with recording to DivX or MPEG-2 files, or direct to DVD. A remote control is included; there's even an S-Video/composite input to digitise analogue home videos.

Compro VideoMate U500

CONTACT Anyware
ONLINE www.anyware.com.au

PHONE 1300 269 927
PRICE \$99



The Compro VideoMate U500 is a USB dongle, so you can use it with desktops or notebooks (but you may need a better antenna than the one included in order to receive all channels). Scheduled recording is easy enough to set up, plus it's possible to record directly to a DVD or an ISO.



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Constructed using thick gauge aluminium and designed for the most advanced components in the world with dedicated mid-ship graphics cooling duct, the Temjin TJ09 is more than just another beautiful chassis, it is the new benchmark.

MAXIMUM PC



Strider ST75F

The world's most powerful 100% modular power supply is now up to 750W

The SilverStone's unique modular system gives you the flexibility unlike any other! Every cable can be disconnected so when you upgrade from our ST60F to ST75ZF for example, there is no need to re-route or disassemble any connections to the rest of the system. Just detach the cables from the Strider power supply and replace it with a more powerful model!



Please visit your local authorized SilverStone dealer or www.silverstonetek.com for more info.

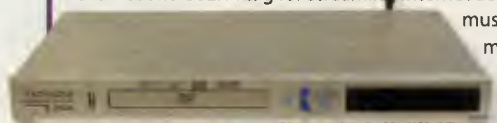
MEDIA ADAPTORS

Zenonic Z500 HD Network DVD player

CONTACT Zenonic PHONE (08) 8322 9544
ONLINE www.zenonic.com.au PRICE \$569



If you want to get your digital media from the study to the lounge room, the Z500 can handle anything you throw at it. It's a progressive-scan MPEG4/DVD player with HDCP-compatible HDMI, plus built-in Ethernet and 802.11b/g for streaming internet access and playing music, photos and movies from any PC on your home network.



Mediatek MG-350HD

CONTACT Anyware Computers PHONE (03) 9763 8200
ONLINE www.anyware.com.au PRICE \$399



The Mediatek MG-350HD is one of the simplest ways to get high-definition action into your lounge room (up to 1,080p resolution). Whack a desktop hard drive inside and the Mediatek plays just about any audio, video or image file you care to throw at it — from the drive or via Ethernet or Wi-Fi.



HD TVs

Philips Cineos 37PF9830/10

CONTACT Philips PHONE 1300 363 391
ONLINE www.phillips.com.au PRICE \$5,999



Philips' 94cm (37in) Cineos offers an amazing 1,920 x 1,080 resolution, making it one of the few LCD TVs to do justice to the resolution in HD and Blu-ray movies. While it doesn't have a built-in digital tuner, it sports HDMI and HDCP-compatible DVI inputs for connecting to HD sources and also has a USB slot and multi-format card reader for playing JPEGs and MP3s.

Panasonic TX-27LWD500A

CONTACT Panasonic PHONE 13 26 00
ONLINE www.panasonic.com.au PRICE \$2,549



Built-in analogue/SD/HD tuners help the TX-27LWD500A stand out as an excellent starting point for getting HD action into your lounge room. Along with a 68cm wide-screen and HDCP compatible HDMI input, it's also got a 6-in-1 memory card reader.

PERSONAL VIDEO RECORDERS

Topfield TF5000PVRI Masterpiece

CONTACT Topfield PHONE 1300 889 803
ONLINE www.topfield.com.au PRICE \$999



If you're ready to revolutionise your TV viewing, this'll let you skip ads, pause live TV and record two programs at once. It sports twin SD digital tuners and a 160GB hard drive, plus the Ice TV Electronic Program Guide lets you "set and forget" the Masterpiece and never miss your favourite show again.



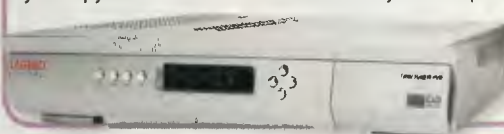
Legend Digital LPVR080

CONTACT Legend Digital PHONE (02) 8223 9656
ONLINE www.legenddigital.com PRICE \$600



The Legend Digital LPVR080 also sports twin standard-definition digital tuners along with an 80GB hard drive (up to 400GB is available). Along with PVR features like pausing live TV and ICE TV-compatibility, it lets you copy across MP3 and JPEG files from your computer via USB so

you can play them on your TV and stereo.



PORTABLE MUSIC PLAYERS

iPod 30GB

CONTACT Apple PHONE 13 36 22
ONLINE www.apple.com.au PRICE \$499



Now this is getting really mental. Truly an insane amount of storage (20,000 songs), which is enough to knock Creative's Zen Vision:M off the top of our list. The screen is now brighter and gives up to 20 hours of battery life. It's not cheap, but yet again, Apple's iPod is the best.

iPod Shuffle 1GB

CONTACT Apple PHONE 13 36 22
ONLINE www.apple.com.au PRICE \$119



We're not turning into iPod fanboys, but for RRP value we still can't go past the Shuffle, which has had a design overhaul and a price cut. It's now so small that fashion models must use their fingertips to hold it in press photos. 1GB of memory gives you up to 240 songs.



apc

Internet Technology Awards 2007

The inaugural APC Internet Technology Awards 2007 recognise the companies and individuals that have done the most to advance the Internet and IP-based services in the past year.

There are 14 award categories, covering key areas of internet development, infrastructure and applications.

Nominees for each category are picked by APC readers, shortlisted by APC and judged by independent industry experts.

Go to www.apcmag.com/apcita for details of the categories and how to nominate candidates.

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Broadband

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per month
1.5Mbps 5GB Data*



*Excess data charged at 18c per MB. ^ Price shown applies when you combine with Dodo Home Phone account for 4 months, set-up fee of \$119 may apply.



Telstra launches 3.6Mbit/s wireless broadband

The telco's new Next G offering provides both high speeds *and* high prices. *Dan Warne reports.*

The launch of Telstra's billion-dollar next-generation 3G network was marked with a "building malfunction" dumping smelly water all over Telstra's most senior executives.

This was highly amusing, but distracted from the point of the event: the launch of the new Next G network.

It's among the first in the world to use High-Speed Downlink Packet Access (HSDPA) — an extension of the 3G WCDMA standard, with 3.6Mbit/s download speed and 384Kbit/s uplink. Telstra says it will update to 14.4Mbit/s down the track and, some say fancifully, 40Mbit/s eventually.

Telstra has promised 98% population coverage with this network: 1.6 million square kilometres, which it claims is 100 times larger than any other 3G network in Australia. It's no coincidence that this matches the footprint of Telstra's CDMA network:

the latter is eventually going to be shut down and replaced by Next G.

As a result, Telstra is reusing its CDMA spectrum for HSDPA. Only



two other mobile networks in the world use the 850MHz frequency for 3G, so hardware options are currently quite limited (at the time of writing, four mobile phones and one PCMCIA card). However, the big upside of the low frequency is significantly better in-building penetration than on other wireless networks.

The mobile card plans are priced a bit above the competitors. For example, the 1GB plan which sells for \$99 on most 3G networks is sold for \$109 on Telstra Next G. However, with the very fast HSDPA speed, good latency and nationwide coverage, Telstra is arguably providing a superior service, so the nominal extra cost seems fair. On the other hand, the \$199 3GB plan is clearly aimed at people whose bill is paid by someone else.

Telstra has not announced any pricing for desktop modem plans as yet.

in brief

ISP CLOSES SHOP

A small ISP, Veridas, has closed down under mysterious circumstances. It had a relatively small number of customers — estimated at around 30,000 — but the shutdown affected many other tiny ISPs who were resellers of Veridas services. Mark Russell of Veridas reseller Green Treefrog told broadband community web site Whirlpool that as many as 75% of his customers had switched to BigPond, who they perceived to be a safer choice due to Telstra's size.



your monthly broadband guide

APC is proud to partner with the independent broadband price-monitoring service Broadband Choice (broadbandchoice.com.au) to bring you the best ADSL and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of APC readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mbit/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under \$35/month.

Light plan: cheapest deal under \$60/month, with at least 512Kbit/s speed and 1GB data.

Family plan: largest download allowance under \$80/month, at least 512Kbit/s and 10GB data.

High-speed: cheapest 1.5Mbit/s plan under \$100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

APC has picked the lowest price for a contract period of six months or less for broadband installation. Otherwise, the lowest-priced option was selected.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 4 October 2006.

"FREE BROADBAND"?

A new ISP called freebroadband.com.au has launched a deal that it says provides "free" broadband. For just \$69.95 line rental, it will generously throw in a 256Kbit/s broadband plan with 5GB of data. While that's definitely no cheaper than paying Telstra line rental and subscribing to any other ISP, they do have a unique sweetener: unlimited "free" VoIP telephone calls to any landline in Australia.

FREE BROADBAND





Name	Phone	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kbit/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kbit/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mbit/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Super-fast broadband ISPs (faster than 1.5Mbit/s)										
iinet broadband2+ ADSL (24Mbit)	13 19 17	www.iinet.net.au	\$29.95† 500MB+ 24Mbit/s	\$39.95 1GB 3Mbit/s	\$69.95† 20GB+ 24Mbit/s	\$59.95† 10GB+ 24Mbit/s	✗	✓	\$79.95 6mths	✗
Internode Extreme ADSL2+	13 66 33	www.internode.on.net	N/A	\$59.95 20GB 24Mbit/s	\$79.95 40GB 24Mbit/s	\$59.95 20GB 24Mbit/s	✗	✓	\$129 6mths	✗
Koala ADSL 2+	1300 720 109	www.koalatelecom.com.au	\$29.95† 500MB 24Mbit/s	\$39.95† 5GB 24Mbit/s	\$69.95† 50GB 24Mbit/s	\$44.95† 10GB 24Mbit/s	✓	✓	\$149.95 6mths	✗
OptusNet Cable	1800 504 504	http://broadbandsales. optusnet.com.au	\$29.95† 300MB+ 9.765625Mbit/s	\$39.95† 2GB+ 9.765625Mbit/s	\$69.95† 20GB+ 9.765625Mbit/s	\$69.95† 20GB+ 9.765625Mbit/s	✗	✓	\$89 12mths	✗
OptusNet DSL Direct	1800 504 504	http://broadbandsales. optusnet.com.au	\$29.95† 300MB+ 24Mbit/s	\$39.95† 2GB+ 24Mbit/s	\$69.95† 20GB+ 24Mbit/s	\$69.95† 20GB+ 24Mbit/s	✗	✓	\$89 12mths	✗
People Telecom ADSL2+	1300 795 833	www.peopletelecom.com.au	N/A	\$49.95† 10GB 24Mbit/s	\$69.95† 25GB 24Mbit/s	\$49.95† 10GB 24Mbit/s	✗	✓	\$99 12mths	✗
Primus up to 8000Kbps	1300 850 000	www.primus.com.au	\$29.95† 1GB 8Mbit/s	\$29.95† 1GB 8Mbit/s	\$69.95† 20GB 8Mbit/s	\$59.95† 10GB 8Mbit/s	✓	✓	\$118 1mth	✓
Telstra BigPond Cable	13 12 82	www.bigpond.com	\$29.95* 200MB^ 7.8125Mbit/s	\$59.95† 10GB^ 7.8125Mbit/s	\$59.95† 10GB^ 7.8125Mbit/s	\$59.95† 10GB^ 7.8125Mbit/s	✗	\$2.50	\$189 12mths#	✗
TPG Residential ADSL2+	1300 360 855	www.tpg.com.au	\$29.99* 600MB 24Mbit/s	\$39.99 3GB 24Mbit/s	\$59.99 30GB 24Mbit/s	\$49.99 18GB 24Mbit/s	✗	✓	\$59.95 12mths	✗
Regular broadband ISPs (1.5Mbit/s or less)										
1 2 3 ADSL	1300 885 646	www.123.net.au	\$29.99† 200MB 256Kbit/s	\$49.99† 1.5GB 512Kbit/s	\$69.99† No limit 512Kbit/s	N/A	✓	✓	\$129 6mths	✓
AAPT ADSL	13 88 88	www.aapt.com.au	\$29† 500MB 256Kbit/s	\$39† 12GB 512Kbit/s	\$59† 15GB 1.5Mbit/s	\$59† 15GB 1.5Mbit/s	✓	✓	\$0 1mth	✓
Accsoft Freeway ADSL	1300 881 668	www.onmyweb.net	N/A	\$52.95 1.5GB 512Kbit/s	\$75.95 15GB 512Kbit/s	\$98.95 10GB 1.5Mbit/s	✓	✓	\$132 6mths	✓
Auritel Broadband	1300 669 254	www.auritel.com.au	N/A	\$59.95 25GB 512Kbit/s	\$59.95 25GB 512Kbit/s	\$89.95 35GB 1.5Mbit/s	✓	✗	\$129 6mths	✓
Aussiewide Residential ADSL	1300 556 491	www.aussiewide.com	N/A	\$59.95 30GB 512Kbit/s	\$59.95 30GB 512Kbit/s	\$99 30GB 1.5Mbit/s	✓	✓	\$110 6mths	✓
Australia On Line ADSL	1300 650 661	www.australiaonline.net.au	\$16.95* 200MB 256Kbit/s	\$39.95 2GB 512Kbit/s	\$54.95 No limit 512Kbit/s	\$94.95 No limit 1.5Mbit/s	✓	✓	\$99 6mths	✓
BIT.net	1300 248 638	www.bit.net.au	\$19.95† 2GB 256Kbit/s	\$29.95† 2GB 512Kbit/s	\$69.95† 40GB 512Kbit/s	\$59.95† 10GB 1.5Mbit/s	✓	✓	\$132 6mths	✓
BKB Internet Residential ADSL	1800 252 638	www.bkb.net.au	N/A	\$49.95 1GB 512Kbit/s	\$69.95 10GB 512Kbit/s	\$99.95 10GB 1.5Mbit/s	✓	✓	\$139 6mths	✓
Blackstump ADSL	1800 890 600	www.blackstump.net.au	\$19.95† 200MB 256Kbit/s	\$44.95† 5GB 512Kbit/s	\$55.95† No limit 512Kbit/s	\$72.45† 10GB 1.5Mbit/s	✓	✓	\$108 6mths	✓
BBI Flat Rate DSL	1300 785 956	www.brownbear.net.au	\$32.95 2GB 256Kbit/s	\$39.95 2GB 512Kbit/s	\$74.95 60GB 512Kbit/s	\$81.95 15GB 1.5Mbit/s	✓	✓	\$119 6mths	✓
BBI Excess DSL	1300 785 956	www.brownbear.net.au	\$32.95* 2GB 256Kbit/s	\$39.95* 2GB 512Kbit/s	\$74.95* 60GB 512Kbit/s	\$81.95* 15GB 1.5Mbit/s	✓	✓	\$119 6mths	✓
Brown Bear DSL / Phone	1300 785 956	www.brownbear.net.au	\$27.95† 2GB 256Kbit/s	\$34.95† 2GB 512Kbit/s	\$69.95† 60GB 512Kbit/s	\$76.95† 15GB 1.5Mbit/s	✓	✓	\$119 6mths	✓
Bullet ADSL	1300 137 454	www.bullet.net.au	\$34.95* 500MB 256Kbit/s	\$49.95* 5GB 512Kbit/s	\$69.95* 25GB 512Kbit/s	N/A	✓	✓	\$150 12mths	✓
CEInternet Broadband	1800 222 256	www.ceinternet.com.au	\$29.95* 200MB 256Kbit/s	N/A	\$79.95 10GB 512Kbit/s	\$99.95 10GB 1.5Mbit/s	✓	\$2.50	\$99 1mth	✓
Comcen Internet	1300 300 324	www.comcen.com.au	\$19.99* 200MB 256Kbit/s	\$39.99* 1GB+ 512Kbit/s	\$79.99 No limit 512Kbit/s	\$69.99* 15GB+ 1.5Mbit/s	✓	✓	\$99 6mths	✓
Connexus Home ADSL	1300 133 888	www.connexus.net.au	\$27.95* 200MB^ 256Kbit/s	\$59.95 10GB^ 512Kbit/s	\$59.95 10GB^ 512Kbit/s	N/A	✓	✓	\$149 6mths	✓
Crazy Broadband	1300 248 638	www.crazy.com.au	\$29.95* 250MB 256Kbit/s	\$42.95 2GB 512Kbit/s	\$49.95 20GB 512Kbit/s	\$82.95 20GB 1.5Mbit/s	✓	✓	\$140 6mths	✓
Cyberspace Internet ADSL	1300 138 977	www.cyberspace.net.au	\$21.95† 200MB 256Kbit/s	\$46.95† 5GB 512Kbit/s	\$57.95† No limit 512Kbit/s	\$79.95† 10GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
DCSI	1300 665 575	www.dcsi.net.au	\$29.95 500MB 256Kbit/s	\$49.95 10GB 512Kbit/s	\$59.95 20GB 512Kbit/s	\$79.95 20GB 1.5Mbit/s	✓	✓	\$125 6mths	✓
DigiPlus	1300 765 600	www.digiplus.com.au	\$29.95† 10GB 256Kbit/s	\$42.95† 5GB 512Kbit/s	\$49.95† 10GB 512Kbit/s	\$89.95† 10GB 1.5Mbit/s	✓	✗	\$99 1mth	✓
Dodo	13 24 73	www.dodo.com.au	\$19.90† 250MB^ 256Kbit/s	\$34.90† 1GB^ 512Kbit/s	\$44.90† No limit 512Kbit/s	\$64.90† 30GB^ 1.5Mbit/s	✓	\$1.90	\$119 1mth	✓
DragNet Budget ADSL	1800 069 050	www.dragnet.com.au	\$26.95* 200MB^ 256Kbit/s	N/A	\$69.95 10GB^ 512Kbit/s	\$95.95 10GB^ 1.5Mbit/s	✓	✓	\$100 6mths	✓
DragNet Power ADSL	1800 069 050	www.dragnet.com.au	N/A	\$54.95* 1.5GB 512Kbit/s	\$74.95 15GB 512Kbit/s	\$95.95 10GB 1.5Mbit/s	✓	✓	\$100 6mths	✓
EFTel ADSL	1300 550 550	http://w3.eftel.com	\$29.95* 400MB^ 256Kbit/s	\$49.95† No limit 512Kbit/s	\$49.95† No limit 512Kbit/s	\$79.95† 40GB 1.5Mbit/s	✓	\$4	\$125 1mth	✓
eTelecom ADSL	1300 303 217	www.etelecom.com.au	\$19.95† 200MB 256Kbit/s	\$39.95† 1GB 512Kbit/s	\$69.95† 15GB 1.5Mbit/s	\$69.95† 15GB 1.5Mbit/s	✓	✓	\$99 12mths	✓
ezConnect ADSL	1300 303 637	www.ezconnect.com.au	\$30.80* 200MB 256Kbit/s	N/A	\$69 10GB 512Kbit/s	\$89.95 10GB 1.5Mbit/s	✓	✗	\$120 3mths	✓
Fonebox ADSL Broadband Internet	1800 366 326	www.fonebox.com.au	\$29.90* 200MB 256Kbit/s	\$49.90 5GB 512Kbit/s	\$69.90† 30GB 512Kbit/s	\$84.90 15GB 1.5Mbit/s	✓	✗	\$99 6mths	✓
FutureWeb ADSL	1300 361 355	www.futureweb.com.au	\$31.95* 200MB 256Kbit/s	\$49.95 1.5GB 512Kbit/s	\$73.95 15GB 512Kbit/s	N/A	✓	✓	\$120 6mths	✓
Global Dial ZapDSL	1300 130 710	www.globaldial.com	\$29.95* 300MB 256Kbit/s	\$49.95 2GB+ 512Kbit/s	\$79.95 No limit 512Kbit/s	\$89.95 14GB+ 1.5Mbit/s	✓	✓	\$99 6mths	✓
Goldweb ADSL	1300 366 065	www.goldweb.com.au	\$29.95* 200MB 256Kbit/s	\$55 1.5GB 512Kbit/s	\$80 15GB 512Kbit/s	N/A	✓	✓	\$139 1mth	✓
Green Tree Frog ADSL	1300 854 820	www.greentreefrog.net.au	N/A	\$55 40GB 512Kbit/s	\$77 100GB 512Kbit/s	\$99 80GB 1.5Mbit/s	✓	✓	\$132 6mths	✓
Green Tree Frog Business ADSL	1300 854 820	www.greentreefrog.net.au	N/A	\$55* 40GB 512Kbit/s	\$77* 100GB 512Kbit/s	\$99* 80GB 1.5Mbit/s	✓	✓	\$132 6mths	✓
iinet broadband1 ADSL	13 19 17	www.iinet.net.au	\$29.95† 500MB+ 256Kbit/s	\$49.95 2GB 512Kbit/s	\$69.95 10GB 512Kbit/s	\$99.95 15GB 1.5Mbit/s	✓	✓	\$79.95 6mths	✓
ISP ADSL	1300 304 288	www.isp.net.au	\$29.70* 800MB 256Kbit/s	\$39.60* 5GB 512Kbit/s	\$77 No limit 512Kbit/s	\$69.30* 25GB 1.5Mbit/s	✓	✓	\$132 6mths	✓
Instant Communications ADSL	1300 139 369	www.in.com.au	\$30* 200MB 256Kbit/s	\$52 5GB 512Kbit/s	\$73* 20GB 512Kbit/s	\$87* 10GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
IntegrityNet ADSL	1300 884 337	www.integritynet.com.au	\$29.95* 200MB 256Kbit/s	\$59.95* 5GB 512Kbit/s	\$69.95* 10GB 512Kbit/s	\$99.95* 10GB 1.5Mbit/s	✓	✓	\$139 12mths	✓

Name	Phone	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kbit/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kbit/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mbit/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Regular broadband ISPs (1.5Mbit/s or less)										
Internode Home ADSL	13 66 33	www.internode.on.net	\$29.95 500MB 256Kbit/s	\$39.95 8GB 512Kbit/s	\$69.95 40GB 512Kbit/s	\$59.95 10GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
Internode SOHO ADSL	13 66 33	www.internode.on.net	N/A	\$59.95 10GB 512Kbit/s	\$69.95 20GB 512Kbit/s	\$79.95 10GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
ispace ADSL	1800 264 246	www.ispace.net.au	\$29.95* 200MB 256Kbit/s	\$49.95 5GB 512Kbit/s	\$69.95 35GB 512Kbit/s	\$89.95 15GB 1.5Mbit/s	✓	✓	\$120 6mths	✓
iTEL ADSL	13 36 36	www.itel.net	\$29.95* 200MB 256Kbit/s	\$45.95* 1GB 512Kbit/s	\$69.95 No limit 512Kbit/s	\$89.95* 10GB 1.5Mbit/s	✓	✓	\$129 12mths	✓
ADSL Broadband	1300 663 484	www.itginternet.net.au	\$31.79* 200MB 256Kbit/s	\$54.89 5GB 512Kbit/s	\$59.90 50GB 512Kbit/s	\$79.90 15GB 1.5Mbit/s	✓	✓	\$95 6mths	✓
JaziNET ADSL	1300 852 949	www.jazi.net	N/A	\$46.50 25GB 512Kbit/s	\$46.50 25GB 512Kbit/s	\$88 35GB 1.5Mbit/s	✓	✓	\$110 1mth	✓
Jump Internet ADSL	1300 785 867	http://jumpnet.com.au	\$30* 200MB 256Kbit/s	\$50* 2GB 512Kbit/s	\$80 40GB 512Kbit/s	N/A	✓	✗	\$0 12mths	✓
Koala ADSL	1300 720 109	www.koalatelecom.com.au	\$29.95† 500MB 256Kbit/s	\$39.95† 3GB 512Kbit/s	\$79.95† No limit 512Kbit/s	\$64.95† 10GB 1.5Mbit/s	✓	✓	\$129.95 6mths	✓
Lizzy ADSL	1300 364 074	www.lizzy.com.au	\$16.95* 200MB 256Kbit/s	\$39.95 2GB 512Kbit/s	\$54.95 No limit 512Kbit/s	\$94.95 No limit 1.5Mbit/s	✓	✓	\$99 6mths	✓
Lucidity Communications ADSL	1300 768 146	www.lucidity.net.au	N/A	\$59.95† 25GB 512Kbit/s	\$79.95† 35GB 512Kbit/s	\$79.95† 35GB 1.5Mbit/s	✓	✓	\$120 1mth	✓
Matilda Internet DSL	1300 665 865	www.matilda.net.au	\$29.95* 200MB 256Kbit/s	\$49.95* 1GB 512Kbit/s	\$59.95 10GB 512Kbit/s	\$89.95 10GB 1.5Mbit/s	✓	✓	\$110 1mth	✓
Midcoast Internet DSL	1300 134 638	www.midcoast.com.au	\$28.50* 200MB^ 256Kbit/s	N/A	\$71.50* 10GB^ 512Kbit/s	\$98* 10GB^ 1.5Mbit/s	✓	✓	\$99 6mths	✓
Neighbourhood Cable	1300 366 248	www.ncable.net.au	\$27.95* 200MB 256Kbit/s	N/A	\$69.95 10GB 512Kbit/s	\$99.95 10GB 1.5Mbit/s	✓	✓	\$99 12mths	✓
Netbay Xtreme DSL	1300 733 215	www.netbay.com.au	\$29.95* 500MB 256Kbit/s	\$39.95* 1GB 512Kbit/s	\$49.95* 10GB 512Kbit/s	\$69.95* 10GB 1.5Mbit/s	✓	✓	\$99 12mths	✓
Netspace Home ADSL	13 14 56	www.netspace.net.au	\$29.95* 300MB 256Kbit/s	\$39.95 1GB+ 512Kbit/s	\$59.95 25GB+ 512Kbit/s	\$79.95 20GB+ 1.5Mbit/s	✓	✓	\$99 6mths	✓
Netspace SOHO ADSL	13 14 56	www.netspace.net.au	N/A	\$59.95 15GB 512Kbit/s	\$59.95 15GB 512Kbit/s	\$99.95 20GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
NetSpeed ADSL	13 16 76	www.netspeed.com.au	\$19.95* 200MB 256Kbit/s	\$54.95* 15GB 512Kbit/s	\$74.95* 30GB 512Kbit/s	\$94.95* 30GB 1.5Mbit/s	✓	\$2	\$139 6mths	✓
Optraweb ADSL	1300 785 954	www.optraweb.com.au	N/A	\$44.95 5GB 512Kbit/s	\$74.95 60GB 512Kbit/s	\$81.95 15GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
Optraweb Excess DSL	1300 785 954	www.optraweb.com.au	\$32.95* 2GB 256Kbit/s	\$39.95* 2GB 512Kbit/s	\$74.95* 60GB 512Kbit/s	\$81.95* 15GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
Optraweb Bundle DSL	1300 785 954	www.optraweb.com.au	\$27.95† 2GB 256Kbit/s	\$34.95† 2GB 512Kbit/s	\$69.95† 60GB 512Kbit/s	\$80.95† 15GB 1.5Mbit/s	✓	✓	\$129 6mths	✓
OzForces Residential ADSL	1300 134 081	www.ozforces.com	\$24.95* 200MB 256Kbit/s	N/A	\$68.95 25GB 512Kbit/s	\$89.95 35GB 1.5Mbit/s	✓	✓	\$119 6mths	✓
OzISP ADSL	1300 654 653	www.ozisp.com.au	N/A	\$48.40 1.5GB 512Kbit/s	\$79.75 30GB 512Kbit/s	\$93.50 15GB 1.5Mbit/s	✓	\$2.75	\$132 6mths	✓
Pacific Internet DSL	13 36 35	www.pacific.net.au	\$29.95* 250MB 256Kbit/s	\$39.95 1GB 512Kbit/s	\$54.95 No limit 512Kbit/s	N/A	✓	✓	\$99 6mths	✓
Primus Flexible Broadband	1300 850 000	www.primus.com.au	\$24.95† 500MB 256Kbit/s	\$34.95† 1GB 512Kbit/s	\$69.95† 20GB 1.5Mbit/s	\$59.95† 12GB 1.5Mbit/s	✓	✓	\$118 1mth	✓
Quik Internet ADSL	1800 000 355	www.gc.quik.com.au	\$29.99* 200MB 256Kbit/s	\$54.99 5GB 512Kbit/s	\$74.99 No limit 512Kbit/s	\$89.99 10GB 1.5Mbit/s	✓	✓	\$120 6mths	✓
Rabbit Internet ADSL	1800 501 106	http://rabbit.com.au	\$27.95† 200MB 256Kbit/s	\$34.90† 1GB 512Kbit/s	\$57† 30GB 512Kbit/s	\$71.41† 10GB 1.5Mbit/s	✓	✓	\$99 6mths	✓
Rapid Net ADSL	1300 724 677	www.rapidnet.com.au	\$34.95 500MB 256Kbit/s	\$44.95 5GB 512Kbit/s	\$49.95 15GB 512Kbit/s	\$79.95 12GB 1.5Mbit/s	✓	✓	\$109 6mths	✓
REEDS.NET Internet Services	1300 734 445	www.reeds.net.au	\$29.95* 300MB 256Kbit/s	\$49 25GB 512Kbit/s	\$49 25GB 512Kbit/s	\$87 35GB 1.5Mbit/s	✓	✓	\$125 6mths	✓
SimpliciTi ADSL	1300 746 754	www.simpliciTi.com.au	\$31 500MB 256Kbit/s	\$42 5GB 512Kbit/s	\$57 30GB 512Kbit/s	\$87 10GB 1.5Mbit/s	✓	✓	\$99 3mths	✓
Snowynet ADSL	1300 556 315	www.snowy.net.au	\$29.90* 200MB+ 256Kbit/s	N/A	\$69.90 No limit 512Kbit/s	\$99.90 No limit 1.5Mbit/s	✓	✓	\$110 6mths	✓
Spin Internet	1300 303 375	www.spin.net.au	\$19.99* 200MB 256Kbit/s	\$39.99* 1GB+ 512Kbit/s	\$79.99 No limit 512Kbit/s	\$69.99* 15GB+ 1.5Mbit/s	✓	✓	\$99 6mths	✓
Supernerd SuperDSL	1300 888 090	www.supernerd.com.au	\$24.95* 500MB 256Kbit/s	\$44.95† 10GB 512Kbit/s	\$59.95 No limit 512Kbit/s	\$89.95* 30GB 1.5Mbit/s	✓	✓	\$110 6mths	✓
TalkTODAY ADSL	1800 486 329	www.talktoday.com.au	\$29.95* 200MB^ 256Kbit/s	\$44.95† 1GB^ 512Kbit/s	\$69.95† 40GB^ 512Kbit/s	\$74.95† 10GB^ 1.5Mbit/s	✓	✗	\$119 6mths	✓
TeeGee Internet ADSL	1300 731 132	www.teege.com.au	\$24.95† 15GB 256Kbit/s	\$34.95† 25GB 512Kbit/s	\$74.95† 35GB 1.5Mbit/s	\$74.95† 35GB 1.5Mbit/s	✓	✓	\$99 1mth	✓
telaustalia SME & Res	1300 783 528	www.telaustalia.com.au	N/A	\$49.95 25GB 512Kbit/s	\$79.95 35GB 1.5Mbit/s	\$79.95 35GB 1.5Mbit/s	✓	✗	\$120 6mths	✓
Telstra BigPond ADSL	13 12 82	www.bigpond.com	\$29.95* 200MB^ 256Kbit/s	N/A	\$69.95† 10GB^ 512Kbit/s	\$99.95† 10GB^ 1.5Mbit/s	✓	\$2.50	\$99 12mths	✓
TSN Broadband	13 14 86	www.tsnninternet.com.au	\$29.95 No limit 256Kbit/s	\$39.95 No limit 512Kbit/s	\$39.95 No limit 512Kbit/s	\$69.95 No limit 1.5Mbit/s	✓	✓	\$129 6mths	✓
Velocity Internet ADSL	1300 557 300	www.velocitynet.com.au	\$29.95* 300MB 256Kbit/s	\$49.50* 4GB 512Kbit/s	\$79.50* 50GB 512Kbit/s	\$89.50* 24GB 1.5Mbit/s	✓	✓	\$69 6mths	✓
VitalTel ADSL Broadband	1300 858 706	www.vitaltel.com.au	\$23.95* 200MB 256Kbit/s	\$48.95 10GB 512Kbit/s	\$48.95 10GB 512Kbit/s	\$68.95 10GB 1.5Mbit/s	✓	✓	\$139.95 6mths	✓
Web Ace ADSL	1800 202 012	www.webace.com.au	\$19.95† 200MB 256Kbit/s	\$39.95† 2GB 512Kbit/s	\$69.95 60GB 512Kbit/s	\$84.95 15GB 1.5Mbit/s	✓	✓	\$119 6mths	✓
Westnet Home ADSL	13 19 60	http://westnet.com.au	\$29.95† 500MB 256Kbit/s	\$34.95† 1GB 512Kbit/s	\$64.95† 25GB+ 512Kbit/s	\$69.95† 10GB+ 1.5Mbit/s	✓	\$0.83	\$99 6mths	✓
Wild IT DSL + Phone	1800 809 453	www.wilditdsl.com.au	\$31.95† 15GB 256Kbit/s	\$39.95† 25GB 512Kbit/s	\$64.95† No limit 512Kbit/s	\$69.95† 35GB 1.5Mbit/s	✓	✓	\$98 1mth	✓
Wild IT Budget DSL + Phone	1800 809 453	www.wilditdsl.com.au	\$28.95† 5GB 256Kbit/s	\$34.95† 1GB 512Kbit/s	\$64.95† 20GB 1.5Mbit/s	\$64.95† 20GB 1.5Mbit/s	✓	✓	\$98 1mth	✓
Winshop ADSL	1300 137 772	www.winshop.com.au	\$29.95 500MB 256Kbit/s	\$49.95 5GB 512Kbit/s	\$59.95 10GB 512Kbit/s	\$79.95 10GB 1.5Mbit/s	✓	✓	\$139 12mths	✓
Yak Networks ADSL	1300 784 866	www.yak.com.au	N/A	\$54.95 25GB 512Kbit/s	\$54.95 25GB 512Kbit/s	\$87.95 35GB 1.5Mbit/s	✓	✓	\$119 1mth	✓
Yaussie Net ADSL	1300 883 352	www.yaussie.com.au	\$31.95† 15GB 256Kbit/s	\$39.95† 25GB 512Kbit/s	\$64.95† 100GB 512Kbit/s	\$69.95† 35GB 1.5Mbit/s	✓	✓	\$98 1mth	✓
yourhub ADSL	1300 762 568	www.yourhub.com.au	N/A	\$55 1.5GB 512Kbit/s	\$80 15GB 512Kbit/s	\$95 10GB 1.5Mbit/s	✓	\$1	\$110 12mths	✓
ZCTS ADSL	1300 852 949	www.zcts.net	N/A	\$46.50 25GB 512Kbit/s	\$46.50 25GB 512Kbit/s	\$88 35GB 1.5Mbit/s	✓	✓	\$110 1mth	✓

Key: * ISP charges excess usage fees when you exceed your download limit. † This price only available if bundled with long distance telephony from the ISP. ‡ Additional download allowance available with this plan for use in off-peak periods.
^ ISP combines sent and received data when calculating usage. # Minimum BigPond Cable setup fee is based on 12-month contract with modem included. Telstra does not offer a BFO modem option.

Living in a Linux-only universe, part 3

Last month we found some issues with Ubuntu media playback. Will things get better this month, as *Ashton Mills* learns to live solely in the world of Linux?

ASHTON MILLS

Ashton has been a tech journo for over 12 years, including five years with APC.



THE RATINGS

In this project we're making the assumption that Windows does all that we need — and we're seeing if Linux and open source software measures up. Perhaps that's not an entirely fair place to sit; however, as the de facto in operating systems for which everyone is familiar, it's our best basis for comparison. So here's how we'll rate the experience of going Windows-free:

OPTIMAL

Passes with flying colours. The task could not only be completed, but better or easier than under Windows.



PASS

No problems. The task can be completed exactly as under Windows.



IFFY

When a task could only be partially completed or completed but not without issue.



FLOP

Not possible to complete at all. (Probably not a good thing.)



File management: something you take for granted under Windows. But — can you afford to take it for granted under Linux too?

THE DEPTHS OF NAUTILUS



Ubuntu uses the Gnome desktop environment, which means the equivalent of Explorer under

Windows is Gnome's Nautilus file management and browsing tool. Fortunately it looks and acts very much like Explorer, but sports a few snazzy features of its own.

First, however, I had to find it. Much like the default in Windows XP, the equivalent of My Computer wasn't on the desktop. Instead, it's found under Places on the taskbar, along with links to network shares, storage and CD/DVD burning, which we'll get onto soon.

Launching Computer brings up Nautilus, and as you can see from the screenshot it's very Explorer-esque. Ubuntu automatically finds all mountable file systems — that is, file systems on other partitions or drives it knows how to access — and lists them. The default view is an icon list, and Nautilus will show thumbnail views for images and text (the first line of a text file is shown) of the files it finds. For sound files, it can play a preview, which is a nice touch.

There are a few differences — Nautilus sports a bread-crumbs style navigation bar the type of which you'll see in Vista. This makes it easy to jump to anywhere in the current path by clicking on the directory hierarchy. Similarly, search is built into the interface, and this same bread-crumbs bar is replaced by an entry field for searching. This then expands with extensible search fields for narrowing your results as they're displayed.

All the usual file management paradigms apply with Nautilus and Gnome, but the first question in my

mind for sharing data in a Windows-dominated world is could it handle common compressed file formats like ZIP, 7ZIP and RAR?

Well, yes it can — no surprise there — with all three formats supported in addition to the ubiquitous TAR and GZIP for Linux. By default, Nautilus launches File Roller to open these archives and add to, extract, or view files.

However, it would only do this for local files. Archives opened from network shares (which I'll get onto next) would spew out an error that looks like File Roller not being able to handle the SMB path to the file. It's a bit disappointing for what should be simple and — more importantly — consistent behaviour for the desktop.

For other formats, Nautilus launches GEdit (think Notepad on steroids) for text files, Eye of Gnome for images (basic viewing and manipulation, just like under Windows) and Totem for music and movies — although as covered last month, there are much better

defaults in Xine and Mplayer for these.

NETWORK SHARES



Now onto the fun stuff — network shares. Once upon a time, getting Linux to access Windows shares — let alone

browse for them — was a royal pain in the behind. Times have certainly changed!

Clicking on Places > Network Servers brings up a list of current networked links and browseable machines on the network. Once you find a share you can browse it and files contained under it directly; however, contrary to logic, right-clicking on a share and selecting Make Link to create a shortcut to the share for future use doesn't work.

So — how to create a direct link to a network share? The option didn't immediately appear to exist in the Nautilus browser the way it does in Explorer under Windows.



Nautilus: the Gnome equivalent of Windows Explorer.

Clicking through to Places > Connect to Server, a dialog with a range of textbox fields presents a number of options for network connections ranging from FTP to SSH, Webdav and of course Window Shares. This is actually a good tool, which I'll come back to in a moment. Selecting Windows Shares for the type of connection I want to make, I'm pleased to find a Browse Network button down the bottom. Great! I won't have to type a network path I can't remember anyway, so I click Browse Network which then promptly, and ironically, opens up the aforementioned network browser for me to drill down and find my Windows Share. Again. And then I'm back at square one, for the Connect to Server dialog box has closed and I'm not actually able to browse for and set up a link using this.

OK, right-clicking on the share again I find, down the bottom, an option called Connect to this server — even though I'm already on the server and I'm prompted for a link name. Voila, a direct link to the share is placed on my desktop! Perhaps all the confusion could have been easily avoided if this option was simply titled Connect to this Share or Make link to this Share?

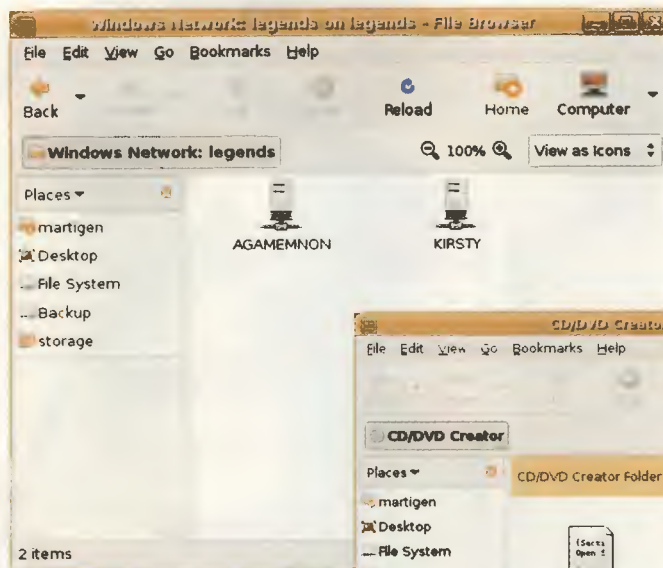
Setting up folders on the system to share over the network is a different matter, but there is at least a properly titled option for it — right-clicking on a folder and choosing Share folder is all you need to do. If Samba (the magic that allows Linux to access and use Windows SMB shares) isn't installed, Ubuntu prompts you to install it, which it then does automatically.

I'm now able to drag and drop files between local and networked resources and life is happy again.

INTERWEB UPLOADING



But back to the connecting to servers tool — downloading anon via HTTP or FTP is easy enough with



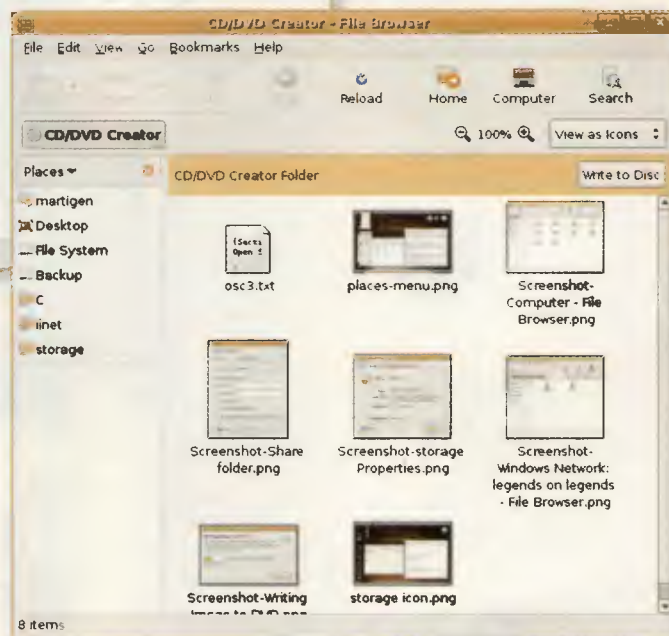
Firefox, but what about if I want to upload files to a server? I have my own webspace for storage and I'd much prefer a simple drag-and-drop affair for updating files stored there, rather than a command line FTP program.

The Connect to Server tool actually made this extremely easy. After selecting FTP (with login) and putting in the server details and login name, clicking Connect put a link directly on the desktop. Then, using it for the first time, I'm prompted for a password which I can choose to be stored for this session (or in the Keyring). Which, of course, leads me into the Keyring functionality of Gnome — as I was then promoted for a password to protect the Keyring. The Keyring is essentially a means to store and manage passworded logins for everything from servers to web forms and is a nice feature of the Gnome desktop. Oddly, however, Ubuntu doesn't install the Keyring Manager by default to give the user more control over the passwords saved for the services and sites used.

Regardless, once entered, Nautilus opens up the FTP site like any other folder on the system, and copying files to and from it is a drag-and-drop affair.

Network browsing is flawless. Yes, I named one of my boxes after Sheridan's ship in Babylon 5 (and not Greek mythology).

The CD and DVD burner works exactly the same as under Windows.



CD AND DVD BURNING



A big part of playing with files is good, old removable media. In Windows, of course, burning a

CD is simply copy > paste > burn.

The CD/DVD Creator portion of Nautilus works exactly the same way as under Windows, allowing me to drag and drop files and then just click Write to Disc. When choosing to burn, however, you can also write to a file, thus creating your own ISOs for burning later. In fact, and speaking of which, Ubuntu had no problem both directly viewing ISOs (File Roller again handles this responsibility) and easily burning them — right clicking on an ISO

and selecting Write to Disc is as simple as it gets.

It may sound like a common-sense feature, but it wasn't always this way with Linux. Even to do simple burns a few years ago used to require using *cdrecord* from the command line, or a front end like XCDRoast (there are better alternatives available today). This integration makes all the difference for an easy-to-use desktop.

CONCLUSION

When it comes to managing, moving and making use of files and formats under my Ubuntu desktop, it's been a pretty pleasurable experience. Ubuntu and Gnome are highly reminiscent of Explorer under Windows, which means it's easy to settle in and have it all work as you expect. This is important — no one wants to futz around trying to get basic functionality working, and Ubuntu scores highly here. Next month: iPods, cameras and more! **2006**

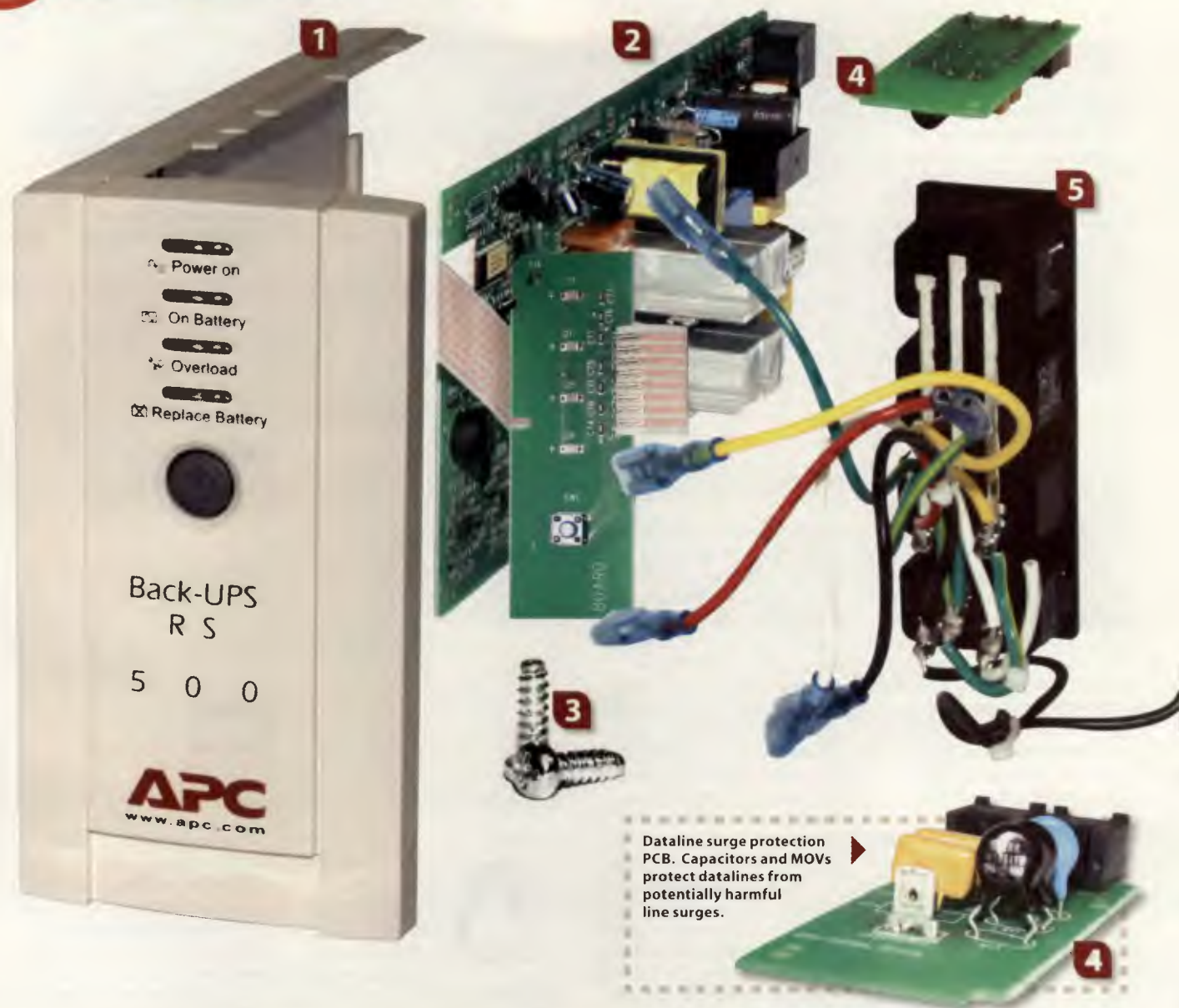


NOW ONTO THE FUN STUFF — NETWORK SHARES. ONCE UPON A TIME, GETTING LINUX TO ACCESS WINDOWS SHARES WAS A ROYAL PAIN. . .



apc

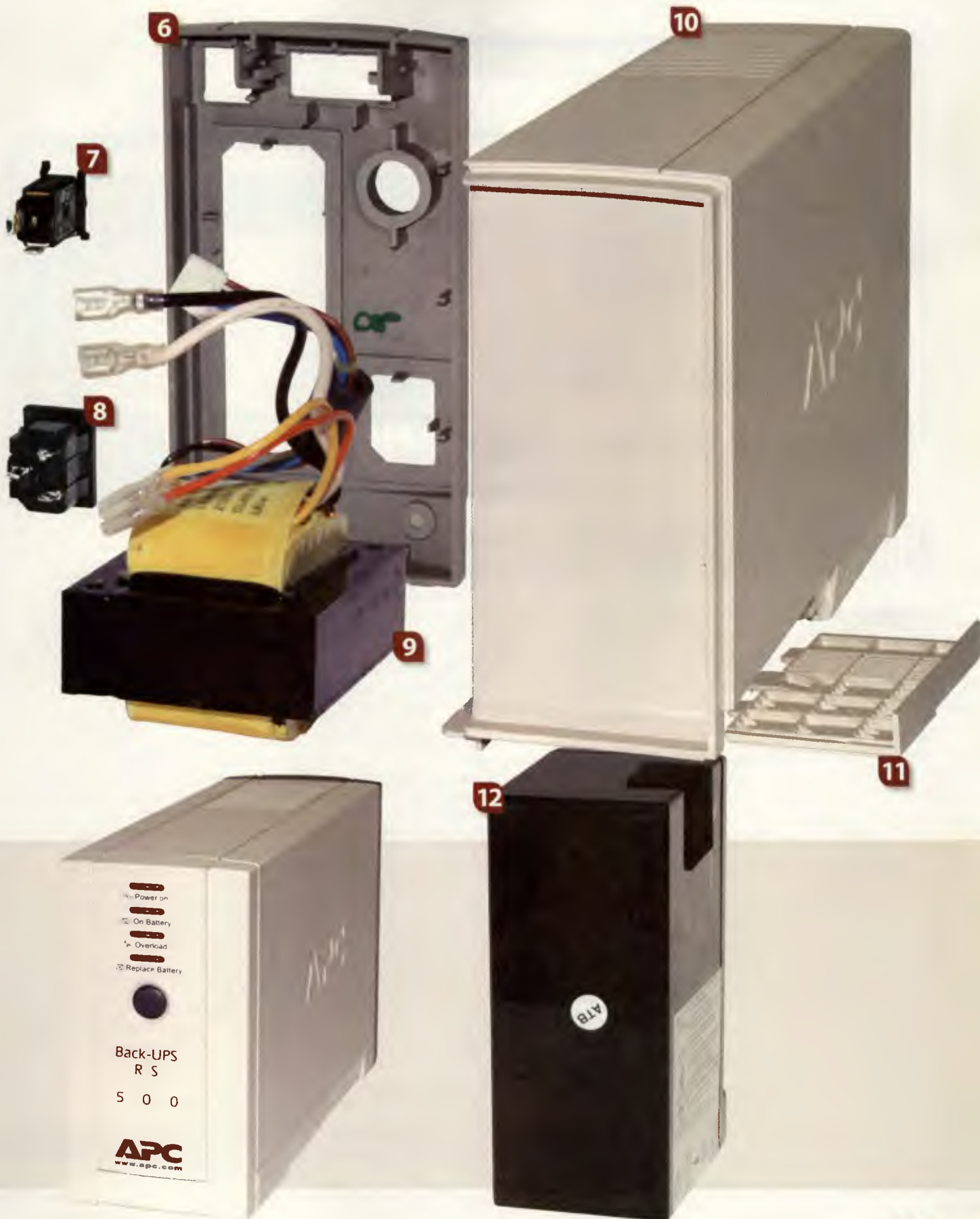
exploding tech

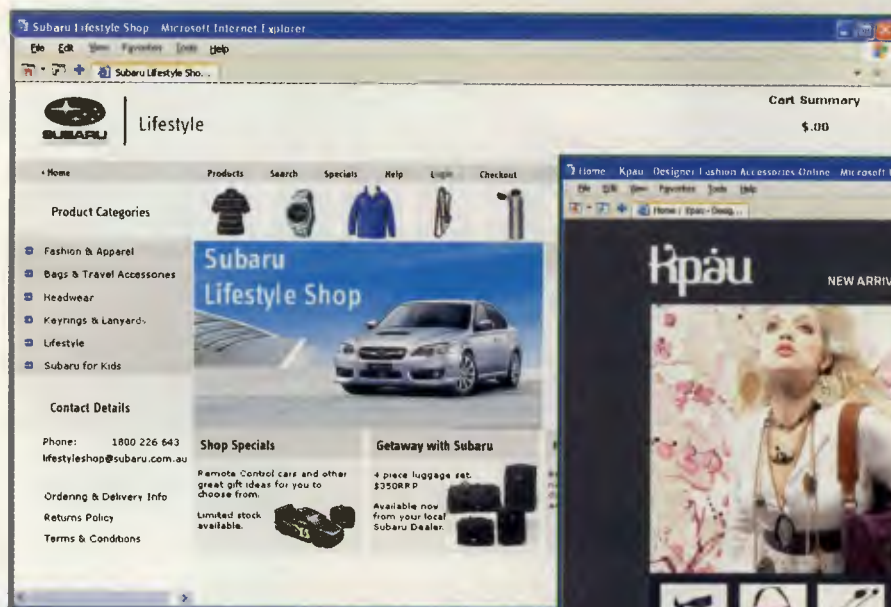


This month, we're exploding an Uninterruptible Power Supply (UPS), a device which provides backup power when your main power source is down. The Back-UPS RS 500VA from American Power Conversion (APC, no relation) is designed to safeguard hardware from potential damage prevent data loss and increase availability. It protects against power surges, spikes and outages

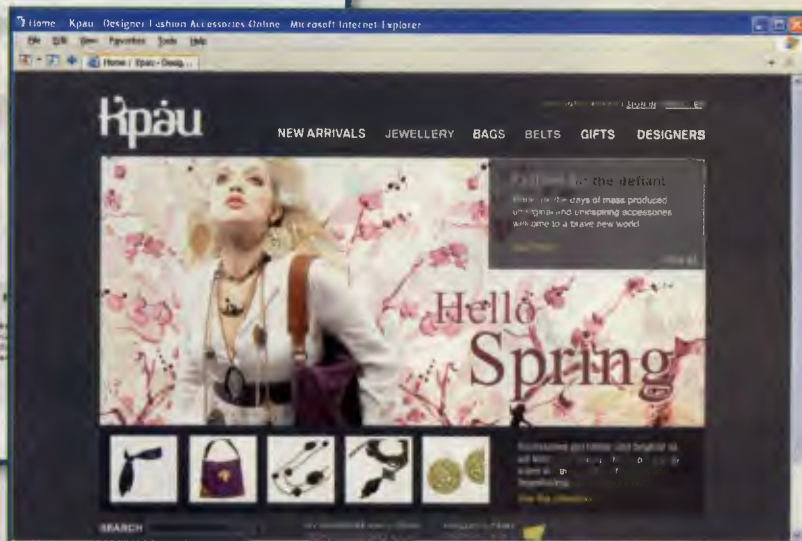
- | | | |
|--|---|--|
| 1 User interface chassis | 5 IEC-320 C13 output power terminal block | 9 Galvanic isolation transformer |
| 2 Main controller board with attached user interface PCB | 6 Input/output panel | 10 Main chassis |
| 3 Input/output panel securing screws | 7 Resettable input circuit breaker | 11 Battery access plate |
| 4 Dataline surge protection PCB | 8 IEC-320 C14 input power receptacle | 12 Maintenance-free valve-regulated sealed lead-acid battery |

APC Back-UPS® RS 500VA





THIS AND FOLLOWING PAGES:
Some of NetMerchant's customers.



Upfront with the shopfront

A fully hosted shopfront is the most realistic e-commerce solution for established businesses that want to do serious online selling. Tony Sarno continues APC's series on e-commerce.

If you want to take your business online, you have to select the level of e-commerce which is right for you.

If you're selling just a couple of products, then a simple product catalogue or cart linked to a PayPal-style payment system is the best. This is the basemast of e-commerce.

If you've got several dozen products with a relatively simple pricing structure, you'll need a shopping cart with links to a payment server or gateway (like the ezimerchant cart featured in the last issue, page 96). This is the next step up and the favoured option for most home-based and small businesses who are finally making the big leap into online selling. It's delivered by dozens of readily available shopping cart solutions.

What if you have a reasonably large, established business with a large range of products and complicated pricing and business rules? An off-the-shelf shopping cart which does not allow you to set different prices for different customers simply won't cut it.

At this level, you need a serious e-commerce solution. It must have all the basic product catalogue functions and links to payment services available in an off-the-shelf cart, but also provide extra functionality and flexibility to truly reflect the way your business operates — and the way customers interact with it.

This level of e-commerce is generally beyond the IT and e-commerce skills of the small business owner-operator.

There are two types of e-commerce solution at this level. The first is *à la carte* systems built by web developers and web designers. The second is fully hosted shopfronts, in which e-commerce specialists extensively customise a solution for your business and host it for you.

The *à la carte* option tends to be offered by technical and design professionals and can be built exactly to your requirements. Although this sounds good, there are many potential problems with this approach. While some web developers or designers can build a great technical solution, it's their understanding of e-commerce and their capacity to tailor your online shop to your business' needs that is going to determine whether it succeeds or is completed anywhere near the original budget. In most cases, you'll need to support the shop once it's been set up.

The other more realistic choice for a small-to-medium-level business (SME) that wants to engage in serious e-commerce is a platform which is fully hosted by an e-commerce specialist. Such a platform can be tailored to the business whilst providing the IT infrastructure to support it. The merchant pays a monthly fee, but in return receives a sophisticated e-commerce platform which doesn't require an in-house IT department.

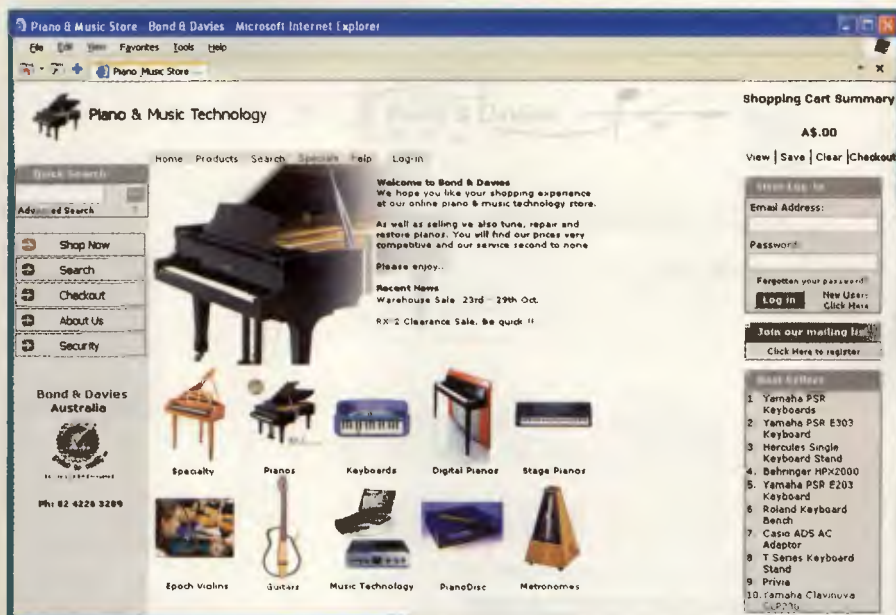
An example of a provider in this category is NetMerchant, an Australian e-commerce solutions company that creates and hosts e-commerce web sites for hundreds of businesses. As with ezimerchant last month, we have chosen to

feature NetMerchant as an example of an e-commerce solution that's been adopted by many businesses. NetMerchant is not related to On Technology, the company that makes the ezimerchant cart — nor does it have a commercial relationship with APC.

NetMerchant's managing director, Luke Amery, distinguishes the fully hosted solution provided by his company from simpler shopping cart platforms. "The NetMerchant solution provides SMEs with the tools for developing their e-commerce channels through a far more sophisticated approach to pricing, cataloguing, freight and marketing. Basically, shopping carts are used by startups or small businesses that want to avoid a significant initial investment. They want to float an idea and if they get momentum they invest further," Amery says.

When it comes to more serious e-commerce, many businesses follow a well-trodden path. "Instead of the project being driven by the sales function, the company turns to their usual source of IT expertise. This generally results in a more technical solution, rather than a sales solution based on the business' needs."

"Most times, the IT expert will engage a web development company, which can be a mistake. Web development companies come in two flavours: either technical or designers. If you select the designer approach, the deliverable will be attractive but not necessarily deliver on functionality — as an example, designers don't



Amery says that a good e-commerce solution should ensure that retail pricing is visible to everybody. However, specific customers that are entitled to receive a better price are shown that price exclusively. NetMerchant is able to provide this, allowing the business to define pricing structures by percentage, fixed or negotiated amounts for every single stock keeping unit (SKU).

A GOOD E-COMMERCE SOLUTION SHOULD ENSURE THAT RETAIL PRICING IS VISIBLE TO EVERYBODY

generally understand rules such as deducting GST when making a sale to a customer in New Zealand. If the technical approach is adopted you can end up with a solution that functions but does not necessarily reflect what a customer is interested in from a visual or usability point of view," Amery says.

"Many design shops who have great expertise in delivering web sites provide e-commerce solutions by modifying open source solutions in an attempt to meet the business requirements. Open source is about scratching itches; people scratching e-commerce itches are not running medium-to-larger businesses."

By comparison to an off-the-shelf shopping cart, a fully-hosted solution supplied by an e-commerce specialist like NetMerchant provides extra functionality and flexibility in areas such as:

1. PRICING

NetMerchant provides simultaneous customer-specific and volume-discount pricing. Many online businesses have three classes of customer: low-volume retail, high-volume retail and trade.

2. PRODUCT OPTIONS

Product options are an important part of catalogue management for a business that thinks about making it easy for their customers. For example, a web site that displays images for a T-shirt with variations in sizing, sleeve length and colour may end up with 30 to 40 potentially identical images and descriptions which can be confusing to the customer and inefficient for the business.

The NetMerchant option makes possible another level of categorisation under the product level. This level is used to define the actual SKUs of a product.

NetMerchant combines this feature with a concept called catalogue inheritance. Anything that can be defined for an

NetMerchant's managing director, Luke Amery.



SKU can be defined for a product, and likewise, a category. This includes (but is not limited to) images, pricing and descriptions.

This approach complements the SKU model, making it unnecessary to supply separate information for each and every item in the catalogue. It is only necessary to supply deviations from inherited values. This works at many levels — for everything from pricing structures through to security.

3. FLEXIBLE FREIGHT CALCULATION ENGINE

If the business wishes to keep things as simple as possible, a simple flat rate for freight can easily be created.

If the merchant needs to make freight charges accurate, these can be controlled with rules varying by delivery geography, order total and order weight, along with other variables that cover product categories such as hazardous materials.

To make this process easier, NetMerchant maintains freight regions in accordance with Australia Post so that assigning freight costs to specific areas is not a big burden. In addition, custom freight regions can be created consistent with the delivery capabilities of the business' freight provider.

4. INTEGRATION

NetMerchant operates as a "semi-connected" application. This means it is a standard desktop application that supports synchronising with the internet when a connection is available. Amery says it can provide an integration point to back-end systems already in use. Typically, other solutions are either desktop-based without a comprehensive server database or are web-based.

He points out that, in completely web-based solutions, it is cumbersome to communicate with an internal accounting system on any kind of scheduled basis. This means automated price, product and transaction integration is difficult to achieve. A possible alternative is an e-commerce solution provided by an accounting system provider. However, few have been able to incorporate the multiple disciplines necessary to deliver the whole solution.

THE CHECKLIST

So, let's assume you've decided your business needs an e-commerce function and you approach an e-commerce specialist like NetMerchant to create it. What happens next?

NetMerchant will first get you to articulate your e-commerce requirements. Amery likens it to software development, where you do an internal requirements analysis.

"An e-commerce project is a multi-discipline affair. It requires a full understanding of the business needs. It requires creativity in design. It requires technical expertise to deliver the required functionality.

"Marketing skills are necessary to generate visitors to the site. And finally, good, old-fashioned elbow grease to ensure information delivered by the site is kept relevant for potential customers.

"The first thing to consider when gathering requirements for an e-commerce project (as with any project) is to determine the desired outcome. What is the goal of the project? How are the broad goals to be reached? And lastly, how is the

outcome to be measured? Sometimes these questions can determine whether the project is worthwhile before any further effort is expended."

Amery outlines the following checklist needed for your requirements:

SITE DESIGN

Have a strong idea on how the final site should look. Look at existing e-commerce sites for elements that you'd like to bring together. Having this list of examples and a strong brand identity will ensure a smooth design process.

SITE FUNCTIONALITY

- It is important to know how many products need to be put online and how to categorise them. The best way to determine this is to think of how a browsing customer will approach the web site. Sometimes this will result in several different strategies: for example, by functional categories, brand or manufacturer. If multiple categories are needed, it is important to select a solution that can support this functionality.
- Consideration must be given to how the shopping cart is to operate and whether or not favourites, wishlists or saved shopping carts need to be supported.
- The flow of the checkout needs to be defined. Any necessary information that should be collected from customers for the transaction being placed should be provided in the analysis so that the final solution delivers on needs.
- The payment methods to be supported are important factors, along with freight methods.
- It is also prudent to think about email marketing when considering e-commerce solutions. A key factor to success can be cleverly targeted offers to customers with a defined purchase history.

REPORTING

As specified in the objectives, it is important to be able to measure the results of the project. Reporting is the way to gain this information. Obviously, if the reporting provided by the e-commerce solution cannot tell you if the outcomes are being met, then the project is in danger of not meeting the necessary goals.

ONGOING MAINTENANCE AND SUPPORT

Thought must be put into how products and pricing are to be maintained over time. Some things can be automated using integration techniques between systems. However, there will always be the need for manual input as the business' existing systems will certainly not have all of the necessary information to present to a potential customer on an e-commerce web site.

Thought must also be given to whether the resources involved in maintenance are to be provided internally — or whether resources will be called upon from the e-commerce solution provider you have chosen.

Next month, we'll put all the things we've been discussing here into action. **END**



MOUSTERPIECE

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Tending the sound garden

Don't suffer the shame of a bloated and disorganised iTunes library. David Emberton shows how to control Apple's ubiquitous media player.

DAVID EMBERTON

David Emberton is a working tech enthusiast who once scored an Amazon.com #1 with the book *Flash 4 Magic*. He's been writing for APC Workshop since 2001 and spends much of his time researching new software, creating games, designing web sites and developing tutorials. He has travelled extensively but still calls Australia home.



SKILL LEVEL

Beginner

TIME TO COMPLETE

Three to six hours

REQUIREMENTS

iTunes 6 or 7

INSIDE INFO

- Apple - iPod+iTunes
www.apple.com/au/itunes
- MusicBrainz
<http://musicbrainz.org>
- iCoverArt
www.maximized.com
- Corripio
<http://nclclasssoftware.com>
- MOG-O-MATIC
www.mog.com
- Cover Version
www.imagemat.de
- Volume Logic
www.octiv.com

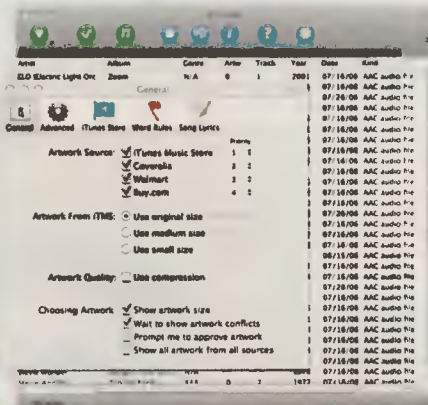
Got great taste in music? Sure you do. And with summer coming up, you'll probably find yourself thinking "party" only to realise that iTunes is *still* crammed with bad rips and bad tags, and is sadly bereft of album art. Here are a few tips to clean up that mess and get your digital music collection sounding as tight as the proverbial drum. Quick fixes: utility programs like Corripio take the drudgery out of adding artwork song by song.

UP THE STANDARD

First of all, pick a generously high bit rate for all your tracks to be encoded in, then prune out anything that's lower. Select View Options > Bit Rate in Library view, then sort in ascending order. Toss the skimpiest tracks into a temporary playlist and print that out so you have a record of whatever needs to be re-ripped or replaced, and then delete.

Perfectionists will aim for Apple Lossless all the way, but 192Kbit/s is really the minimum of decency for AAC or MP3. Unfortunately, there's no way to sort simultaneously by compression format and bit rate in iTunes, so you just have to choose a number that's acceptable for all types.

Next up, click View > Show Duplicate Songs. This function scans for song titles that appear more than once in a given view, and can help identify unwanted files. Generally it's a good idea to delete or uncheck the lesser quality version of any duplicate pair, but test-listen first to make sure one isn't a remix or from a better CD master.



Before leaving iTunes, spare a thought for the misfit tracks. If your music collection includes movie quotes, audiobooks, comedy routines or anything else that isn't strictly music, there's now a control to prevent them from showing up in Shuffle mode. Just select the files, right-click to Get Info, and then select Options > Skip when shuffling.

By now, you should have most of your files in order: everything's ripped in high quality, sounds great, and only appears once. However, that still doesn't address the issue of accurate metadata or album art. This is where it becomes necessary to use some additional tools.

EMBRACE AND EXTEND

If a lot of your files come from friends or have hand-typed tags, there's no guarantee that their descriptions will be completely accurate. MusicBrainz is a free service that corrects metadata by analysing the audio fingerprint of an MP3 and matching it against a database populated by users. This means that the system sends out a signature of your processed track and gets back a best guess of the relevant artist, album, etc.

To use MusicBrainz, install Tagger (Windows), or iEatBrainz (Mac OS X). Tagger is a standalone program that doesn't integrate directly with iTunes, so you'll need to process files in small batches and replace them in the Library as you go. iEatBrainz does work with iTunes, but acoustic fingerprinting is CPU-intensive and should only be performed on a handful of tracks at a time to prevent lockups. Unfortunately, only the Mac utility supports AAC, because it decodes music via QuickTime.

So what about album art? iTunes 7's Store will supply cover images free to account holders, but only for tracks on sale (ie. no Beatles). If you have songs that aren't listed or don't want an Apple account, other programs exist to pull the artwork from alternative online sources. For iTunes on Windows, install and run iCoverArt. For Intel and PowerPC Macs, Corripio Artwork Finder will do the same job.

Other handy iTunes accessories include MOG.com's MOG-O-MATIC, the visualisation plug-in Cover Version, and Octiv Software's excellent Volume Logic.

Say goodbye to the boredom of finding artwork song by song, Corripio does it all for you.

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Remote XP support

Found yourself at the hub of your family's IT support needs? These tips from *James Bannan* will get those remote systems dancing to your tune.

JAMES BANNAN

James Bannan moved to Australia from England in 1982, but remains a stubborn Yorkshireman to the core. He graduated from Melbourne University with a BA/BCom in 1999 and went straight into IT. James worked as a support consultant at Pricewaterhouse Coopers for over three years before moving to St Leonard's College as a systems manager. Outside of work, James is a competitive ballroom dancer.



SKILL LEVEL

Intermediate

TIME TO COMPLETE

One hour

REQUIREMENTS

Computers running Windows XP SP2

INSIDE INFO

- CheckMyIP
www.checkmyip.com
- Netgear
www.netgear.com.au
- PortForward.com
www.portforward.com/routers.htm

We've all been there at some time — you're considered the fount of IT wisdom in your family, so you end up dealing with all these little support requests that seem to keep trickling through. The worst thing is that you're trying to support systems which you didn't build, unsure of what the person on the other end of the phone is looking at, and having loads of trouble trying to make your instructions understood. Remote access is clearly the way to go, but you don't want to make a mess of things in an attempt to make life a little easier.

WEAPON OF CHOICE

For the purposes of this Workshop we'll assume that Windows Remote Desktop Protocol (RDP) is the best choice when dealing with neophyte users. Other options like RealVNC or TightVNC are out there — and offer more in the way of live screen sharing and optimisation — but they also require the installation of additional software and can be overkill for one-off or simple tasks.

By default, Windows XP is enabled for remote support using RDP. It's an effective support tool; just don't expect the other person to follow along with what you're doing. Windows XP only allows one active desktop session at a time, so if you Remote Desktop to a distant XP system, it will log off whoever was previously active. Be sure to mention this before initiating a remote support session.

To configure RDP on the remote client, have the person at the other end right-click on My

Computer, select Properties and go to the Remote tab. By default, RDP is set to allow the local user to send remote support requests out (known as Remote Assistance). This feature leverages off MSN Messenger and email to work. To be honest, I always disable this. It's a painful feature and rather fussy. Plus, as the person providing the support, you really don't want to be at the beck and call of remote users. It's a pathway to pain. Get them to untick the box.

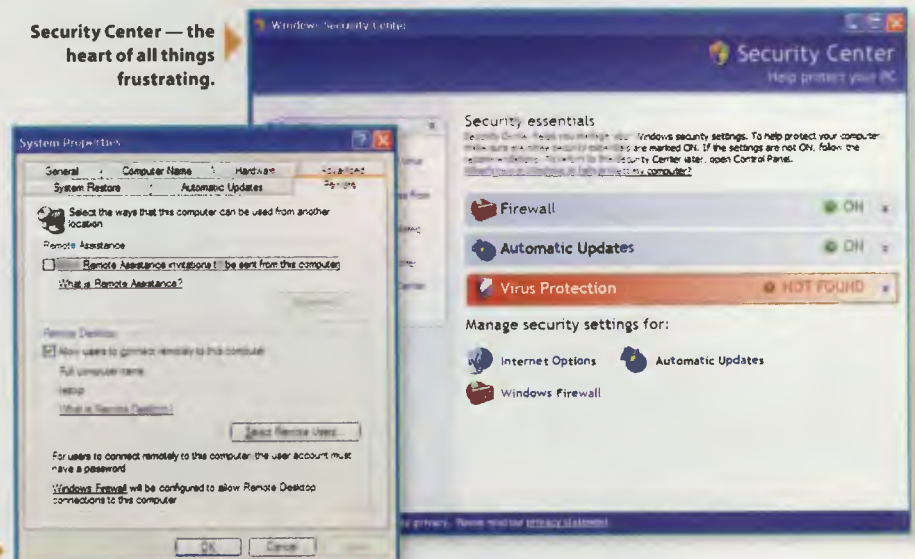
Then, have them select the option to "Allow users to connect remotely...". This means incoming RDP connections can be initiated from a remote machine (ie. yours). The computer name is irrelevant — you won't be able to resolve it across a wide area network, so just ignore it. And that's about it — RDP is enabled.

MAKING THE CONNECTION

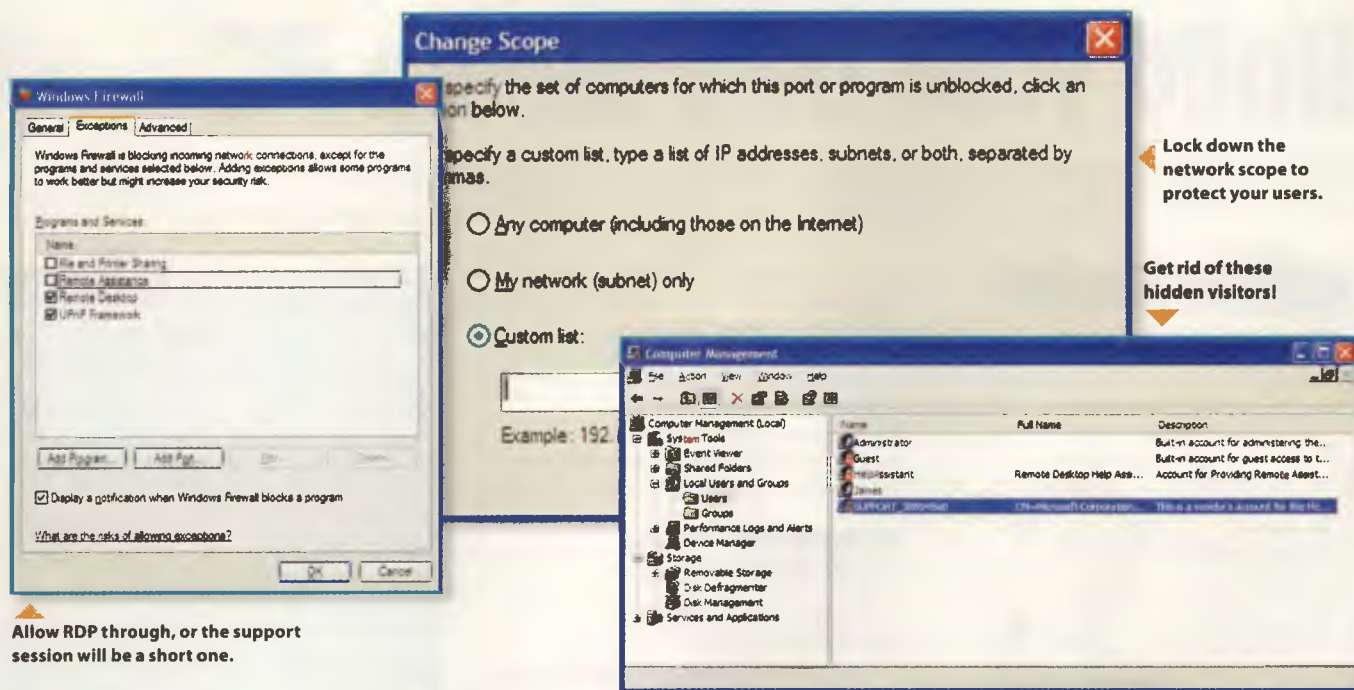
The next step is to find your remote user's computer in the vast world of cyberspace. Just because we're all connected doesn't necessarily make anyone easy to find. DNS isn't an option in this case — barely any user with home broadband has their connection registered in DNS. Additionally, most home broadband plans use dynamic IP addressing rather than static. So, for you to RDP to a remote user you need the IP address which they're currently using.

Obtaining this information depends very much on the type of connection they have and how the computer is accessing the network. Broadband connections that physically plug into

Security Center — the heart of all things frustrating.



Support should be a one-way street. . .



THE NEXT STEP IS TO FIND YOUR REMOTE USER'S COMPUTER IN THE VAST WORLD OF CYBERSPACE — NOT ALWAYS EASY

the computer are easiest, because the external IP is probably the same as the system IP. In this case, there are a number of options — `ipconfig` in a command window will show the current adaptor IP, or right-click on the adaptor icon in the system tray and select Status then Support.

If the broadband connection is made through a router or gateway device, things get a bit trickier. The computer itself will be using an internal IP address, probably in the 10.x.x.x or 192.168.x.x range. These are reserved IP ranges for internal networks and can't be reached from the outside. The external address will reside on the router itself. Most broadband devices have a web interface which shows you the current connection status, including the IP address.

However, a fool-proof way that works in either case is to use an online service like CheckMyIP. This is a simple scripted page which tells you what IP address the connection is coming from. Direct your remote user to <http://checkmyip.com> and they'll instantly be able to relay the correct target address.

In the scenario of an internal computer connecting through an external device, the device will need to be configured to allow your RDP session through. By default, broadband routers don't let traffic through which originates externally. The device will have to be configured to forward traffic on port 3389 (the RDP port —

or ports 5500, 5800 or 5900 with VNC) to the correct internal IP address. Your user may need some help with this. All broadband devices have a web interface, which will be detailed in the user manual. Alternatively, you can visit the manufacturer's web site (for example, Netgear) and grab the latest manual to help your user along. Another good resource is <http://portforward.com>.

TIGHTENING THE SCREWS

Just because RDP is functioning doesn't necessarily mean it's functioning securely. We don't want to leave these remote systems exposed, so there are additional setup tasks to take care of. On the same Remote tab as before, click Select Remote Users. This shows which local system users have access over RDP. Members of the Administrator group always have full access. But there are hidden features here which need exposing.

Have the person you're helping right-click on My Computer again and select Manage. Expand Local User and Groups and highlight Users. The right window view displays the local system users and there are two to notice in particular — HelpAssistant and SUPPORT_... These are installed by default by the OS and are tied in to the whole remote support experience. But, they're unnecessary and present a security risk, so have them deleted.

That does still leave you with the problem of needing to authenticate to the local system. If you know the user well enough, just use their username and password (if they're happy to give it to you). This helps you because you can log on as them and see what they see. This has a distinct advantage when troubleshooting problems which are reliant on using a particular user profile. Otherwise, create a new profile.

The last stop is Windows Firewall. By default, Remote Assistance has access through the Firewall but Remote Desktop does not until enabled. To make sure, encourage the user to go into Security Center via the Control Panel and under "Manage security settings for:" click Windows Firewall. In the Exceptions tab, Remote Assistance should be unticked and Remote Desktop ticked.

To enhance security for your users a little bit further, have them highlight Remote Desktop and click Edit. This shows that the Remote Desktop firewall rule allows through traffic on port 3389 from *any* IP address — an unnecessary exposure.

Try and get the IP range of your own broadband connection. You should be able to get this from your IP and subnet information, or you can check with your ISP. Modify the rule by selecting Change Scope > Custom List, and typing in the appropriate range and subnet information. This ensures that the system will only accept connections from your ISP's subnet. Not the most secure setting in the world, but far better than the default.

And that's it. Secure, reliable connectivity to support your favourite aunts and uncles — who will surely love you now all the more! [ETC](#)



Build your own media PC

Want to make a media system from scratch rather than revamping an old PC?

Stephen Withers shows you how to build a PC designed with entertainment in mind.

STEPHEN WITHERS

Stephen Withers has been writing for APC since its second issue. With a professional background in operations research and IT, he switched to full-time writing and editing in 1990. As much as he enjoys cutting code, he now has insufficient time for anything more complex than scripting. Stephen has been networking computers since the time when an Ethernet card cost more than a PC.



SKILL LEVEL

Intermediate to advanced

TIME TO COMPLETE

Four hours

REQUIREMENTS

- Parts as described in text (see "What we used")
- Thermal paste (may be supplied with cooler)
- Medium and small Phillips-head screwdrivers (various lengths may be needed, depending on the case design)

IN THIS SERIES

- Part 1 – December '06
Assembling the hardware
- Part 2 – January '07
Installing the software

We recently looked at making changes to an older PC to make it more useful as part of an entertainment system. This month we have a new project: assembling a media PC from scratch.

THE GOAL

Our aim was to build a PC that delivers most home entertainment functions at a reasonable price (while looking good enough for the lounge room).

This called for several features:

- TV: live, recorded or timeslipped
- Radio
- CD/DVD: playback and burning
- Multi-channel audio
- Games: decent hardware performance, but we're not building a high-end games machine
- Network connectivity: access to the internet, shared printers and storage etc.
- Remote control
- Provision for digital cameras and other peripherals

You'll need to decide whether you're aiming for as silent an operation as possible or just a quiet PC. The former means minimising the number of system fans, which generally involves using a low-power (in both senses) CPU and an external power supply. We wanted to keep open the possibility of running demanding applications such as games and video editing software, so we opted for a more traditional approach.

ASSEMBLY

The case is an important part of a media PC. It needs to be reasonably attractive as it's going

WHAT WE USED

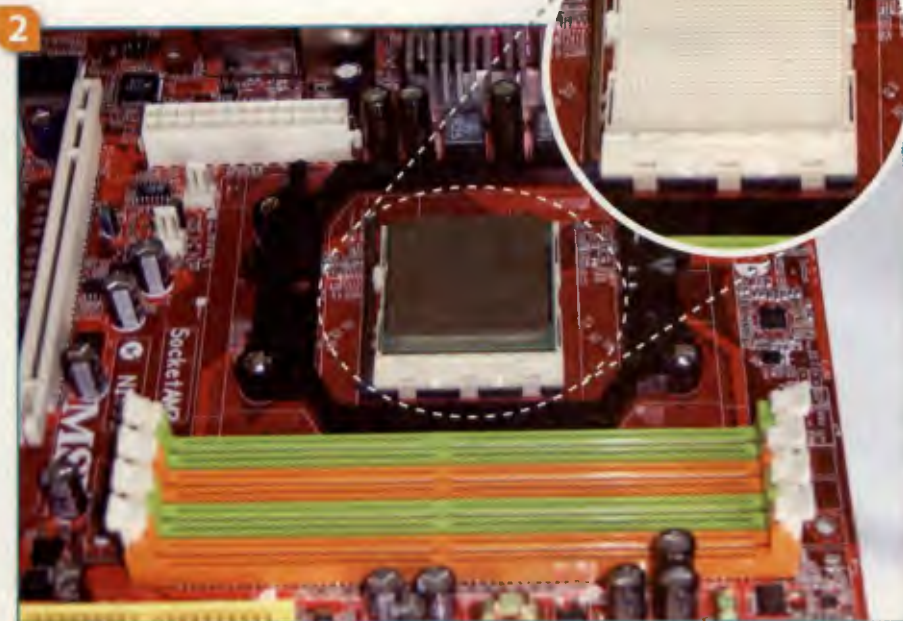
- Thermaltake Mozart case with Media Lab. Supplied by Anyware, www.anyware.com.au, (03) 9763 8200, \$359.
- MSI K9N Neo motherboard. Supplied by MSI, www.msicomputer.com.au, approx. \$165.
- AMD Sempron 3500+ CPU. Supplied by MSI, approx. \$160.
- Two ValueRAM 512MB DDR2 667 memory modules. Supplied by Kingston Technology, www.kingston.com, 1800 800 703, \$153.67 each.
- Palit 7300GT Sonic graphics card. Supplied by Kingston Technology, approx. \$140.
- Maxtor DiamondMax 11 500GB SATA hard disk. Supplied by Maxtor, www.maxtor.com.au, (02) 9369 3662, \$429.
- LG Internal 16x Super Multi DVD/CD Rewriter GSA-4167B. Supplied by LG, www.lg.com.au, 1800 725 375, \$99.
- Pinnacle PCTV 310i analogue/digital TV tuner with FM radio. Supplied by Lako Pacific, www.lakopacific.com, (03) 9455 7444, \$199.99.
- Thermaltake Silent 939 K8 cooler. Supplied by Anyware, \$59.

in the lounge room or family room. You also probably want front connectors to hook up video and still cameras — plus game controllers and other devices (and some kind of display).

Some professional system builders favour BTX for home entertainment PCs, saying it gives better cooling for a given level of noise. We're not arguing



The Thermaltake Mozart comes with pre-assembled fans and power supply.



Inset: the motherboard waiting for the CPU. ...
Main: ...and the Sempron processor dropped into place.



Both DIMMs fitted — note how close they are to the CPU.

with that, but BTX hardware is more for system builders than enthusiasts. The choice of cases, motherboards and other components becomes incredibly restricted if you move away from ATX.

For our example, we toyed with the idea of a case with a built-in LCD screen, but that seemed overkill — so we settled on a Thermaltake Mozart with the Media Lab option comprising a front-panel display, remote control and supporting software. In addition to its aluminium styling, the Mozart features front USB, FireWire and audio connectors plus concealed 5.25in drive bays.

Begin assembly by removing the case cover and any cross-bracing. Move the wiring bundles and any accessory items packed inside the case out of the way. The Mozart case comes with the fans and power supply already assembled, which saves a few minutes work; however, if your case does not have a power supply, your first move will be to install it by screwing it into its bracket.

It's important to follow assembly instructions and examine the case carefully before you start, as some components may block others. For example, the floppy drive bracket may obstruct the screw holes for the 5.25in drives — or one of the mounting holes of a full-size ATX motherboard may be blocked by the optical drive. Most decent-quality cases will come with guidelines as to the best order for installation of hardware.

Hint: when you remove plates, brackets etc., temporarily replace the screw in its hole. (You won't have to then keep track of which screw goes where.)

Before you can choose a motherboard, you need to decide which CPU to use. We chose a Sempron 3500+ CPU as it provides a good balance between performance and affordability — it's easy to find at \$160 or less. If you're serious about gaming or video editing, you might consider a

more powerful option such as an AMD Athlon 64 X2 or an Intel Core 2 Duo. The choice is yours, but it needs to be made early as it will determine what motherboard you can use.

For this Workshop we wanted a motherboard with onboard Ethernet, plenty of USB ports and 5.1 or 7.1 audio. The K9N Neo fits that bill in most regards, but if you're thinking of attaching the system to an AV receiver, be aware that it unfortunately lacks optical audio output. Similarly, if you want to be able to connect a video camera via FireWire, you'll need to install a PCI controller card.



YOU NEED TO DECIDE WHETHER YOU'RE AIMING FOR AS SILENT AN OPERATION AS POSSIBLE OR JUST A QUIET PC

The K9N Neo's three PCI slots might not seem especially generous, but even if you fit a FireWire card as well as the TV tuner there's still a free slot for later use.

Motherboards offering integrated graphics vary greatly in quality and usually lack TV-out (the complex wiring on the motherboard often leads to interference with the video signal). To date, Intel's integrated graphics solutions have been woeful for home theatre (for example), but solutions from ATI and Nvidia are adequate. The best solution, which we decided to go with for this project, is a separate video card for TV-out and some basic gaming performance.

It's generally easier and safer to fit the CPU before installing the motherboard. Socket AM2 uses a ZIF socket with a locking lever, so unhook it

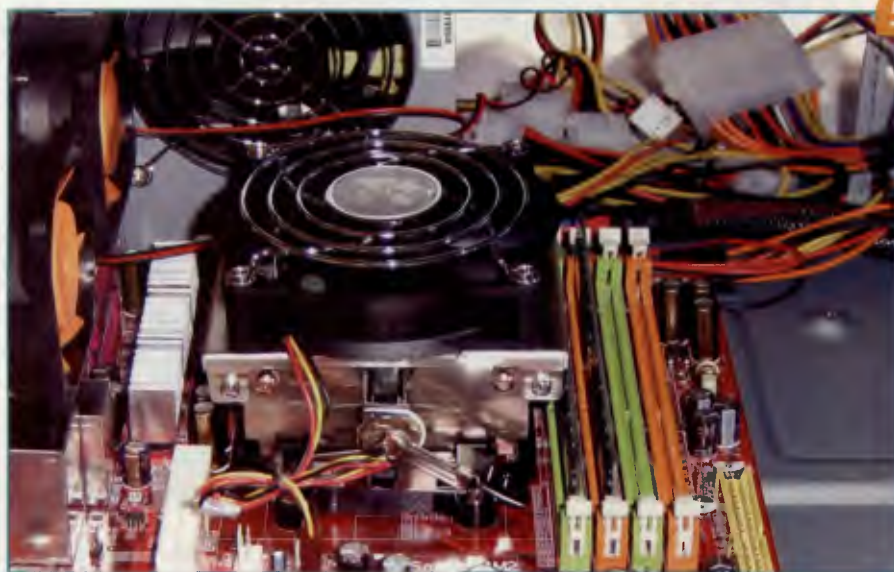
from the small retaining clip on the side of the socket and move it to the vertical position. Align the triangle on one corner of the CPU with the moulded triangle on the socket. If the socket is open and the alignment is correct, the CPU will drop into the socket — if it doesn't, don't apply any pressure: if it is the correct position and it doesn't drop in you may have bent CPU pins.

Intel LGA775 CPUs don't have pins. Instead, the pins are incorporated in the socket on the motherboard. To correctly install an LGA775 CPU, first open the locking mechanism then carefully align the two notches on each side of the CPU with

the lugs on the socket. When you place the CPU in the socket, make sure it is level — so to minimise damage to the pins. Once in place, close the locking mechanism and latch it.

Unless your CPU cooler's size or weight will make accessing the screw holes and RAM slots on the motherboard difficult, it should now be installed. Any special mounts should first be assembled and installed on the motherboard. This is especially important for some AMD coolers that use a brace on the back of the board — which will be inaccessible once the motherboard is installed in the case.

Apply a very thin, even smear of thermal grease to the top of the CPU. AM2 coolers are attached with a clip that hooks over the lugs on the outside of the plastic retainer attached to the



5



6

▲ Cooler attached to the socket clip and the power cable connected.

▲ Most of the front-panel connections are to the adjacent corner of the motherboard.

motherboard, while LGA775 coolers use four push-pin points. Once you have installed the cooler as per manufacturers instructions, attach the fan cable to the appropriate motherboard connector.

Remove knock-outs from the back I/O panel as necessary to suit the motherboard connectors, or remove the entire I/O panel. (This generally involves pushing it inwards; however, in some cases you may need to remove a screw.) Then, reverse that process to fit the custom panel provided with your motherboard — even then, you may still need to remove a knock-out or three to accommodate optional features like optical out or Ethernet ports.

Next, fit the risers to the case to suit the motherboard. Use the motherboards mounting holes as a guide. To do this, hold the motherboard

roughly where it will go and work out which screw holes you will need (generally speaking there should be six or so). Screw the risers loosely into these holes. Don't over-tighten them. Find the required number of screws that fit the stand-offs. Then, double-check you have the correct screws for the motherboard risers you are using (cases will usually ship with two or three different types).

Position the motherboard over the risers, taking care to avoid scraping the board against the case. Sit the board on top of the risers and ensure that the ports are correctly aligned with the back I/O panel. Once everything is in place, screw the motherboard onto the risers.

Next order of business is to install RAM. On a lot of systems, a VGA card will block one end of the DIMM slot, making it difficult to add RAM once a

graphics card is installed. A gig of RAM is the sweet spot at present: it provides sufficient headroom when multiple applications are running, but doesn't cost a fortune. Most motherboards have at least four slots, so you can always add a second pair of DIMMs down the track.

Spread the retaining clips at each end of the memory slot and then align the module so that the slot in the connector edge matches with the tongue in the socket. Push down evenly and firmly until the retaining clips engage with the module. Be sure to check the documentation so you populate the memory slots in the correct pairs.

③ If you opted to not install the CPU cooler before, now is the time to do it.

③ Now is the tedious job of making all the connections. You'll need to read the manuals for the motherboard and the case together.

Start with the main power cable, as it is the heaviest and least flexible part. On cases with LCD or VFD displays, such as the Thermaltake Mozart's optional Media Lab display, power comes via a piggyback cable on the main motherboard connector — plug it in between the power supply and the motherboard. Other displays may require four-pin Molex connectors or similar (just check the manual). Besides the 24-pin ATX power cable, you'll also need to attach the four or eight-pin ATX12V plug as well, depending upon your CPU.

Work through the minor cables from the case, such as the power switch, speaker and any front panel peripheral connections. Take care to observe the correct polarity — some connectors have a blank pin that makes it difficult to get wrong (but others are easily reversed). Take care with front USB panels on some cases — there is a tendency to create single-pin connectors rather than a unified plug for motherboard USB headers.

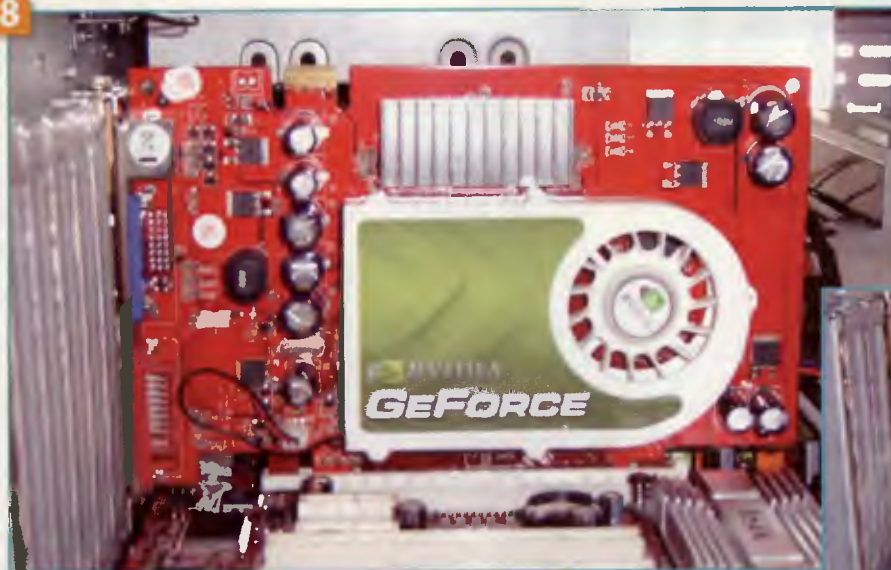
If you want to install the USB bracket to get rear-panel access to the remaining USB connector,

7

▲ Cases such as the Mozart include a trim piece to mask the DVD tray.



8



The 7300GT Sonic graphics card, with the PCI slots in the foreground.

now's the time. Most cases have at least one rear blanking plate that doesn't correspond to an expansion slot, so that's the natural choice. Remove the plate, position the bracket and secure it with a screw if needed. Run the cable to the appropriate motherboard header.

Generally speaking, internal USB and FireWire cables (the latter was unused in our system, but is designed to be connected to IEEE 1394 ports on the motherboard) are relatively thick. Try to keep the wiring tidy — well-placed cable ties can help.

Once these are connected, it's time to connect the case fans. The Mozart case has two fans on the back panel and one on the front. Here, we found it most convenient to plug one rear fan into the other

The Pinnacle PCTV 310i tuner, prior to fitting the audio cable.

side (which may previously have held a blanking plate in place). You will probably need to ensure the eject button on the case properly connects with the one on the drive.

Hard disks are fitted to 3.5in bays, which usually come in the form of a removable bracket for easy install. The Mozart's HD bays are suspended from a bracket that fits across the top of the case. We used a single 500GB SATA hard disk from Maxtor for the project, but most home theatre cases have space for at least two drives. Again, use two screws on each side and take care to find the right size among the hardware provided with the case. If it doesn't screw in easily, either it's the wrong size or you've crossed the threads — both of which are

liked, but there are various passively cooled video cards on the market if you prefer silence.

To install the graphics card, start by removing from the case the blanking plate that corresponds to the PCI Express slot. Align the card with the slot and press down firmly until it seats. Some higher-end graphics cards will need to have a power connector plugged in; however, budget and mid-range cards generally do not need this. Fit the retaining screw if it's needed by your case.

❶ Installing the TV tuner is a similar process, except that you use a PCI slot. We used a Pinnacle PCTV 310i as it brings in the widest range of off-air material: digital TV, analogue TV (for the community stations that haven't gone digital) and FM radio. It was also the top performer in APC's recent test of digital tuners (APC July, page 62). We suggest you do not connect the tuner's audio output with the motherboard's CD audio input — we originally did so, and for our pains were treated to echoing sound. Unplugging the cable delivered normal operation.

Check all the wiring is out of the way (remembering to plug that DVD cable in if you've left it until now), then replace the case cover and fit its retaining screws.

Attach a keyboard, mouse and screen — and then apply power. If the boot screen appears, you're in business — if it doesn't, go back and recheck your work.

A keyboard with built-in trackpad or trackball would complete the system nicely for lounge room use, but we made do with a PS/2 keyboard and a USB mouse while setting things up. **BTIC**

NEXT MONTH

- In our next instalment, we'll take a look at the software needed for the project.



IF THE BOOT SCREEN APPEARS YOU'RE IN BUSINESS – IF IT DOESN'T, GO BACK AND RECHECK YOUR WORK

and then connect the second to one of the spare connections from the PSU. The front fan is located just beneath the hard drive bay, so the obvious choice was the power cable feeding the hard disk. If your case doesn't ship with fans then ensure you have at least two to install: one sucking air in and one blowing it out. You'll need to check your case manual to see what size fans are needed, with 80mm and 120mm being the most common.

❷ Fit the DVD burner into the appropriate bay. We reused the LG 16x DL model from our previous project. Like a lot of home theatre chassis, the Mozart has a "stealth" design for the middle 5.25in bay (to conceal the drive's tray). If your case has a similar feature, follow the manufacturer's instructions: basically, you remove any blanking plate from the bay, slide the drive in from the front of the case and secure it with two screws on each

bad. A lot of home theatre chassis also ship with sound-deadening grommets for hard disk mounting (so again you'll need to check your manual for specifics). Because of the design of the Mozart, we didn't replace the drive bracket until late in the assembly.

We found it easier to leave the DVD cabling until last, as the flat parallel ATA cable tends to be obstructive. In comparison, SATA cables are a joy to use: narrow, flexible and easy to handle.

❸ Graphics performance is another balancing act. The budget-range Nvidia-based Palit 7300GT Sonic delivers the goods with the necessary speed for games and HD video. It provides a VGA output, dual-link DVI (for up to 2,560 x 1,600 resolution), component video and S-Video. The card is also designed to support Vista's 3D user interface. The cooling fan is a little noisier than we would have



This removable bay makes it easy to install hard drives.

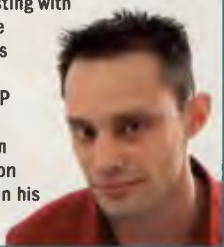
9

Optimising LAMP, part 1

Get your home or office web server running as smoothly as possible with an optimised MySQL installation under Linux. *Jarrold Spiga* explains how.

JARROLD SPIGA

Jarrold Spiga is an infrastructure and network engineer who specialises in getting Linux and Windows systems happily coexisting with each other. He currently holds CCNA and numerous MCP certifications and dabbles in web application development in his spare time.



SKILL LEVEL

Intermediate

TIME TO COMPLETE

Two hours

REQUIREMENTS

Recent versions of Linux, Apache, MySQL and PHP.

INSIDE INFO

- Upgrading MySQL 4.0.x www.mysql.org/doc/refman/4.1/en/upgrading-from-4-0.html
- MySQL configuration options www.mysql.org/doc/refman/5.0/en/configure-options.html
- MySQL compile and link options www.mysql.org/doc/refman/5.0/en/compile-and-link-options.html

IN THIS SERIES

- Part 1** — December '06
Linux and MySQL
- Part 2** — January '07
Apache and PHP
- Part 3** — February '07
Benchmarking and tuning

The Linux, Apache, MySQL and PHP/Perl/Python combo (LAMP for short) is by far the most popular web-hosting platform in use today. And usually, each of the tools that make up this combination run well without additional configuration. However, the standard LAMP install can always be tweaked and tuned to maximise performance and uptime, and to get the most out of a slow connection (or even prolong the life of ageing hardware).

In general, LAMP optimisation requires a balance of speed and scalability. The graph (right) demonstrates why: the orange line shows a configuration where as much data as possible has been pushed to RAM, while the green line represents a more conservative approach to system resource usage. For light loads, the orange configuration is the king of speed. Although, with increased requests, RAM resources soon become exhausted, leading to heavy file swapping and longer load times.

The green configuration is a couple of milliseconds slower per request at first, but is able to handle more simultaneous requests overall. The orange line is indicative of how most Apache and PHP binaries are configured (though the point where RAM is exhausted varies from server to server and from web site to web site). Of course, if you had an infinite amount of RAM, there would be no problem with this — but most people won't buy gigabytes of memory just for their Linux servers.

WHERE ARE THE BOTTLENECKS?

One of the most overlooked bottlenecks on any LAMP server is the network interface — especially if you're hosting your LAMP server on an ADSL connection with limited upstream bandwidth. If you have a 128KB/s uplink and an average page size of 30KB to serve, you wouldn't want to receive much more than one page request every two seconds without looking at using data compression or without optimising the size of TCP buffers in your kernel.

Other bottlenecks include:

- The CPU — Every time a PHP script is run, CPU resources are used to process the logic within the script. The more complex the script, the more CPU resources are used. Using PHP optimisation tools help reduce this bottleneck (we will cover this in next month's Workshop).
- Shared memory — When PHP needs to pull information out of a MySQL database, shared memory is used to facilitate the transfer of this information. Similarly, shared memory is also

used by PHP to pass the resulting HTML pages to Apache. Optimising how much shared memory is allocated (and how the LAMP services use it) is the key to minimising the effects of this bottleneck.

- The file system — Accessing data on the hard disk is significantly slower than accessing cached data stored in RAM — even if you have fancy RAID 1 or RAID 10 arrays in your server. I/O bottlenecks are often the most severe on the performance of your server. Ensuring that LAMP services are configured correctly can help with this.
- The number of running processes — It takes time for Apache to spawn new worker threads (the threads that handle all requests for data from the web server). The more processes running, the more load there is on the server. Minimising what is running — and streamlining how many Apache worker threads are running — is the key here (again, we'll focus on this next month).

Warning: Most of the optimisations listed in this series are suggestions and may not be suitable for all LAMP installations. As such, if you aren't certain what impact implementing any given change will have, perform some additional research before proceeding. And lastly, always keep a backup of your stable-running configurations in case you need to revert to them for some reason.

LINUX OPTIMISATION — TCP SETTINGS

The best place to start tuning your configuration is to adjust your kernel's TCP settings by editing the `/etc/sysctl.conf` file in your favourite text editor. By adding the following lines, you will harden your server against Denial of Service and spoof attacks, as well as optimising the TCP stack to a lesser degree. These settings are predominantly a security optimisation:

```
# Disable IP source routing
```

```
net.ipv4.conf.default.accept_source_route = 0
```

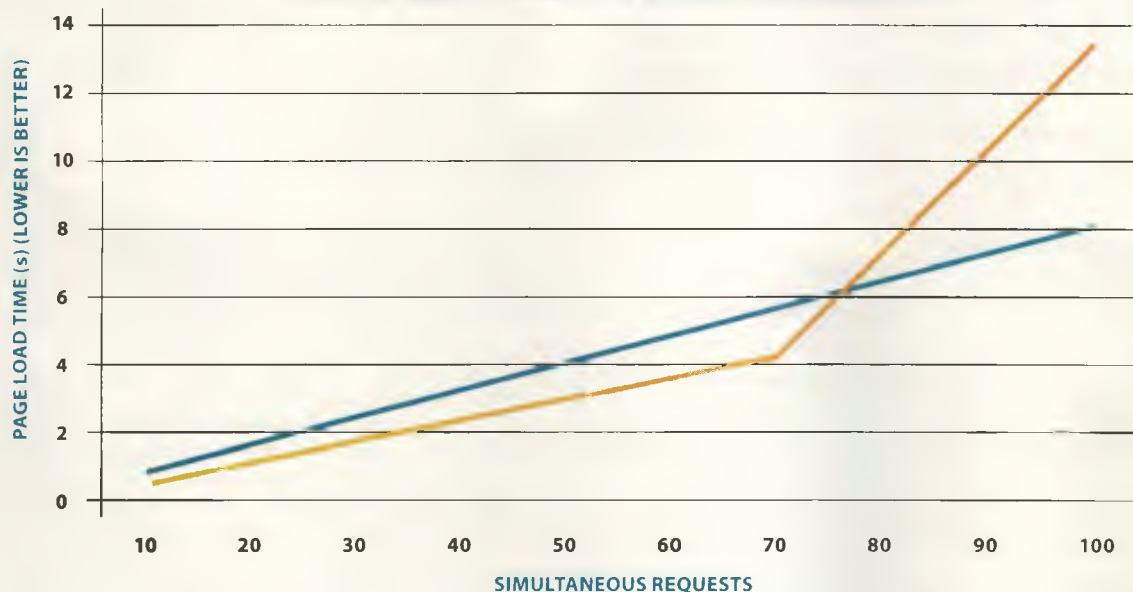
```
# Enable source route verification
```

```
net.ipv4.conf.default.rp_filter = 1
```

```
# Disable ICMP redirect acceptance
```

```
net.ipv4.conf.default.accept_redirects = 0
```


DO WE OPTIMISE FOR SPEED OR TO MAXIMISE SYSTEM RESOURCES?



The tortoise vs the hare: the quickest loading page isn't always the best. The key to performance is to balance speed with resource usage.

OPTIMISE SPEED

OPTIMISE RAM

```
# Enable the logging of spoofed packets
net.ipv4.conf.default.log_martians = 1
```

```
# Decrease various TCP timeout settings
net.ipv4.tcp_fin_timeout = 20
net.ipv4.tcp_keepalive_time = 1200
```

```
# Turn on various (optional) TCP settings
net.ipv4.tcp_window_scaling = 1
net.ipv4.tcp_sack = 1
net.ipv4.tcp_fack = 1
net.ipv4.tcp_timestamps = 1
```

Note: many people choose to leave these off depending on personal preferences.

```
# Other TCP settings which (generally)
should be on
net.ipv4.tcp_syncookies = 1
net.ipv4.icmp_echo_ignore_broadcasts = 1
net.ipv4.icmp_ignore_bogus_error_responses = 1
```

```
# Performance optimisations
net.ipv4.tcp_reordering = 5
net.ipv4.tcp_synack_retries = 2
net.ipv4.tcp_syn_retries = 3
net.ipv4.tcp_max_syn_backlog = 2048
net.core.netdev_max_backlog = 1024
net.core.hot_list_length = 256
net.ipv4.tcp_max_tw_buckets = 360000
```



IF YOU'RE INSTALLING A NEWER VERSION OF MYSQL, DON'T NECESSARILY RELY ON DEFAULT BINARY PACKAGES

```
net.core.rmem_default = 65535
net.core.rmem_max = 8388608
net.ipv4.tcp_rmem = 4096 87380 8388608
net.core.wmem_default = 65535
net.core.wmem_max = 8388608
net.ipv4.tcp_wmem = 4096 65535 8388608
net.ipv4.tcp_mem = 8388608 8388608 8388608
net.core.optmem_max = 40960
```

When these lines have been added, execute the following commands to flush the routing table on your system and to reload the adjusted settings into the kernel (alternatively, you could simply reboot):

```
/sbin/sysctl -w net.ipv4.route.flush = 1
/sbin/sysctl -p
```

MYSQL OPTIMISATION — RECOMPILE AND/OR UPGRADE

In some cases, upgrading software can yield a boost in performance. If you're running MySQL version 3.x, upgrade it to version 4.0.x at the very least — the jump in performance between these two versions is quite amazing.

Note: If you are upgrading MySQL, be wary when upgrading from 4.0.x to 4.1.x or higher. The password-hashing mechanism of MySQL

changed between the 4.0 and 4.1 code paths. For more information, see the MySQL web site (see Inside Info).

If you're installing a newer version of MySQL, don't necessarily rely on the default binary packages you can upgrade to from your distribution provider. While simply upgrading the binaries is trivial to perform (and allows you to upgrade to future versions in a similarly simple manner), these binaries are built with compatibility in mind. Extra character sets? Debug tools? Dynamically linked programs? Who actually needs those on a live server?

Before you attempt to recompile MySQL, it's a good idea to read through the list of typical configuration options for the version of MySQL you are compiling. You should also examine your current MySQL environment and determine the following:

- Where your current MySQL binaries are located — this will form the basis of what your installation prefix is.
- Where your current MySQL databases are located — this will form the `localstatedir` option in the `configure` command.
- Where your current Unix socket file is located.

Most of these pieces of information can be determined easily from within a tool such as phpMyAdmin. Once you have this information and have downloaded the latest source code,



AN INCORRECTLY SET KEY-BUFFER SIZE IS THE MOST COMMON CAUSE OF PERFORMANCE ISSUES IN MYSQL

piece together your configure command using the above information. A sample configure command that I have used in the past is:

```
CFLAGS="-mcpu=i686 -march=i686 -O3 -pipe -fomit-frame-pointer" \
./configure \
--prefix=/usr/local/build/mysql \
--with-mysqld-user=mysql \
--without-debug \
--with-client-ldflags=-all-static \
--with-mysqld-ldflags=-all-static \
--disable-shared \
--localstatedir=/usr/local/build/mysql/var \
--with-extra-charsets=none \
--enable-asm
```

Once the configuration process has been completed, don't forget to compile and install your new version of MySQL (**make**, followed by **make all**). Depending on the binaries that come with your distro (and what options were used in their compilation), you can improve the performance of MySQL by up to 50%.

MYSQL OPTIMISATION — DAEMON CONFIGURATION

The my.cnf file is the single configuration file that holds all of the directives that instruct the MySQL Daemon on how it should handle various buffers, connections, timeouts and caches. If ignored, you could have large chunks of RAM that are dedicated to various cache systems (that aren't being used). Even worse, you might not have enough cache set up, forcing MySQL to frequently read data from your hard disk drives.

The amount of RAM that you have in your system is the main factor that determines what

values you should use in your my.cnf file. However, based on a server with 1GB of RAM, the following settings would be a good starting point:

```
[mysqld]
connect_timeout=15
interactive_timeout=100
join_buffer_size=1M
key_buffer_size=128M
max_allowed_packet=16M
max_connections=500
max_connect_errors=10
mysam_sort_buffer_size=32M
read_buffer_size=1M
table_cache=1024
thread_cache_size=100
thread_concurrency=4
wait_timeout=300
query_cache_size=64M
query_cache_limit=1M
query_cache_type=1
```

If you have more than 1GB of RAM in your system, consider doubling the `key_buffer_size`, `mysam_sort_buffer_size` and `read_buffer_size`. Also, if you don't use InnoDB tables, add the following line to the configuration:

```
skip-innodb
```

Once you've adjusted the MySQL daemon configuration, restart MySQL and keep a close eye on the database server for a while. Execute the `mysqladmin -uroot -p extended-status`

command periodically and pay especially close attention to the following values:

- `key_read_requests`
- `key_reads`
- `open_tables`
- `opened_tables`
- `uptime`

The key buffer in MySQL keeps track of indexes within tables of your database, allowing it to be able to retrieve information from that database much more quickly than if these indexes needed to be read manually. An incorrectly set key-buffer size is the most common cause of performance issues in MySQL.

Ideally, you want the ratio between the `key_read_requests` and the `key_reads` observed above to be as high as possible. If the ratio falls below 100:1, you should try to increase the `key_buffer_size` to as much as your memory allows (in some circumstances, this may require a RAM upgrade). At the same time, you don't want to over-allocate RAM to the key buffer to prevent under-utilisation.

Likewise, the number of open and opened tables is another key performance indicator. The number of tables open at any given time will never exceed the table cache. The trick with the table cache is to ensure that the cache is large enough so that the most frequently used tables are always cached — while those that are not frequently used are occasionally cached. While there is no hard rule on this, the following table (see below) should demonstrate some of the table-caching scenarios that can be encountered — and the appropriate action to be taken. **ETC**

NEXT MONTH

- In the next instalment of Optimising LAMP, we'll work on the web server side of things, demonstrating what you can do to optimise both the Apache web server and PHP.

	EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
table_cache	2,048	1,024	512
open_tables	42	1,019	512
opened_tables	3,412	8,071	7,642
uptime	2,465,645	5,621,365	28,896
Notes	Most of the table cache is unused.	Even though table cache is full, MySQL has been running for a long time without significantly more tables needing to be opened.	Table cache is full, MySQL has only been running for a short time and a lot of other tables have been opened in this short time.
Action to take	Reduce table_cache.	No action required.	Increase table_cache if RAM permits.

Curves and skin tones

Patrick Kirsch shows you how to use Photoshop Curves to adjust skin tones and display a more healthy and realistic appearance.

PATRICK KIRSCH

Patrick Kirsch, former designer of APC, has worked in digital media and design for more than 15 years. He has extensive experience on computers, ranging from animating on Amiga, to video post-production, print, web and multimedia. Patrick is also a musician and a home cinema buff – just don't get him started on movies.



SKILL LEVEL

Intermediate

TIME TO COMPLETE

One hour

REQUIREMENTS

Adobe Photoshop (version 6 or later)

INSIDE INFO

Photoshop Hall of Fame
www.photoshophalloffame.com/winners/dmargulis.html

So far we've seen several techniques to improve contrast in your images, all of which utilise the available tonal range to emphasise areas of interest. It is equally important to ensure that the colours in your image are, if not entirely accurate, at least believable. Flesh tones are particularly important. Natural, healthy-looking skin far outweighs the need for neutral greys or good contrast. With Curves you can take care of all these issues simultaneously.

PAINT BY NUMBERS

Thanks to the work of legendary Photoshop guru Dan Margulis, colour correcting "by the numbers" can be done in 90% of cases, including those where flesh tones are involved. By using his ratios of ink values, pleasing and natural skin colour can be achieved, regardless of the quality of the original.

The image below has been shot under fluorescent light, but with the colour balance set for daylight. Aside from that, the exposure is pretty good. To begin, the highlight, shadow and neutral grey points need to be found. The eyedropper tool can be used to select up to four sample points by shift clicking on the image. These sampled points' RGB values then appear in the Info palette. In this case, samples have been selected at the darkest shadow point that could be found, the brightest highlight that is not a specular (a reflection of a direct light source), a best-guess neutral grey mid-tone, and a mid-range skin tone point where it can be assumed there is no makeup. The forehead is often best for this.

First, the shadow point should be set to around 20 — a commonly accepted value for the darkest printable black. The sample values of 16,17,20 are close enough. A slight colour imbalance in dark tones is not a real problem, as the eye does not perceive these easily. The highlight value of

200,224,249 indicates a distinct blue cast (which of course can be seen in the image). Using a Curves adjustment layer, the highlight points for the red, green and blue channels should be selected, then input values matching the highlight sample values typed in. The output values should then all be set to 240 — the highest white value most desktop printers (or even commercial printing presses, for that matter) can reproduce whilst still showing any detail.

The flesh tone should be attacked next. The subject is an adult Caucasian. The skin sample point shows RGB values of 150,148,159 equalling CMYK of 30,24,13,23 (found using the colour picker and typing in the values). For this skin type, the yellow value should be about 25% higher than the magenta, and the cyan 25% of the magenta value. This results in CMYK values of 6,24,30,23 (the black value can be ignored), which translates to RGB of 186,165,142. In the Curves dialog on each of the red, green and blue channels, a point should be added with the input values of the sample and output values of the target skin tone (red: 150 to 186, green: 148 to 165 and blue: 159 to 142). The before and after values appear in the Info palette. The neutral sample still shows a blue cast, so the red point could be raised further to, say, 195, and the blue point lowered even further to around 135.

As most of the area of interest lies between the mid-tone and the quarter-tone points, the S-curve (see APC September, page 107) could be applied subtly to the RGB curve, which will improve the contrast in this range.

For Asian subjects, the desired values are ratios of cyan at 15% of magenta and yellow 30% more than magenta. For very fair-skinned Caucasians or babies, cyan should be close to zero, with magenta and yellow almost equal. Dark-skinned subjects can have ratios as high as 50% cyan to magenta, 150% yellow to magenta. Learn these numbers and practise these techniques in order to become a master of the skin fix.



A discoloured image (above) is corrected (right) using the Curves tool in Photoshop.





Web development with Ajax, part 4

In the final instalment of our Workshop series, *Tim Buchalka* explains everything you need to know about Ajax frameworks.

TIM BUCHALKA

Tim Buchalka is a software developer with over twenty years' experience in numerous computer languages. Since 1998, he has focused primarily on web app development. Tim operates a software development company in Adelaide, Intrinsic Services, and is currently working on several major web apps for release in 2006.



SKILL LEVEL

Intermediate

TIME TO COMPLETE

One hour

REQUIREMENTS

Text editor; web browser.

INSIDE INFO

- Dojo Toolkit
<http://dojotoolkit.org>
- Google Web Toolkit
<http://code.google.com/webtoolkit>
- Yahoo! Ajax Library
<http://developer.yahoo.com/yui>
- qooxdoo
<http://demo.qooxdoo.org>
- Atlas Framework
<http://atlas.asp.net>

Ajax frameworks are libraries of code designed to reduce the complexity involved with developing applications. Some of the additional features they bring are cool user-interface widgets, easily implemented functions and even code generation — to allow you to design applications visually. These features aim to simplify the development of an Ajax web site.

I've specifically waited until the last Workshop in this series to introduce these frameworks, in order to ensure that you have a good grounding in the basics of Ajax.

Having looked "under the hood" at the XMLHttpRequest object, you will be better prepared to debug and fix problems you may encounter with Ajax frameworks (since you know generally what they are trying to do). All you need to do now is learn the specifics of how a given framework is put to work.

Used correctly, these frameworks will give you a huge step up in using Ajax and greatly reduce the time necessary to develop an Ajax application. However, you shouldn't expect an Ajax framework to automatically design an Ajax application for you. They still require design and programming skills, acting more as a helper to you and implementer of your application. In other words, Ajax frameworks tools are not silver bullets.

The products listed in this Workshop are some of today's most popular Ajax choices. For the most part, they're well supported with updates, good documentation and demonstration code and, of course, some really useful functionality. And although there are also some great commercial toolkits out there, all the options here are either free or open source software.

DOJO TOOLKIT

Dojo's promoters claim it makes professional web development better, easier and faster.

Featuring a huge selection of widgets, drag-and-drop tools, Google and Yahoo! map support and a whole lot more, Dojo is a comprehensive and feature-packed product. Both IBM and Sun Microsystems have signed on to support the Dojo Foundation, adding credibility to the package.

If there were a negative thing to say about Dojo, it would be with regards to inconsistent documentation. This is getting better over time, but it's certainly frustrating that some parts of the framework have excellent documentation but other parts have little or none at all, leaving the hapless user to try and figure it out for themselves. The new Dojo wiki is a step in the right direction to fixing these support problems.

Adding the framework code to a page is quite straightforward and logical, unlike some other packages, and Dojo has the smarts to allow you to only load the required features, rather than requiring the entire library to be loaded for each screen. Such a requirement adds unnecessary bloat to a web page and takes up more resources.

Below is some example code for incorporating Dojo features into a page:

```
<script type="text/javascript">
  djConfig = { isDebug: false };
</script>
```

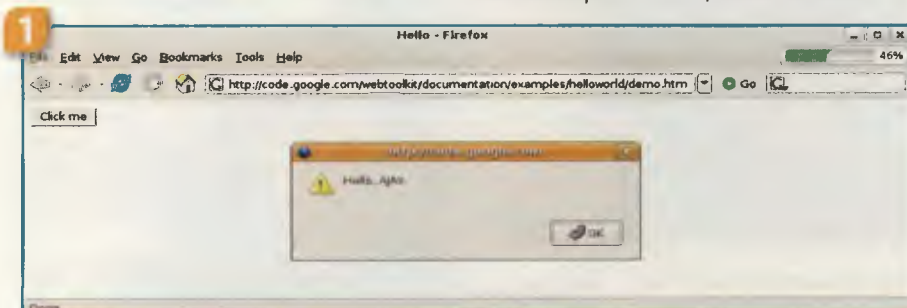
This snippet is used to define whether debugging messages should be shown onscreen or not. Setting the `isDebug` value to true would show this debugging code. Other options are available and can be configured in a similar way.

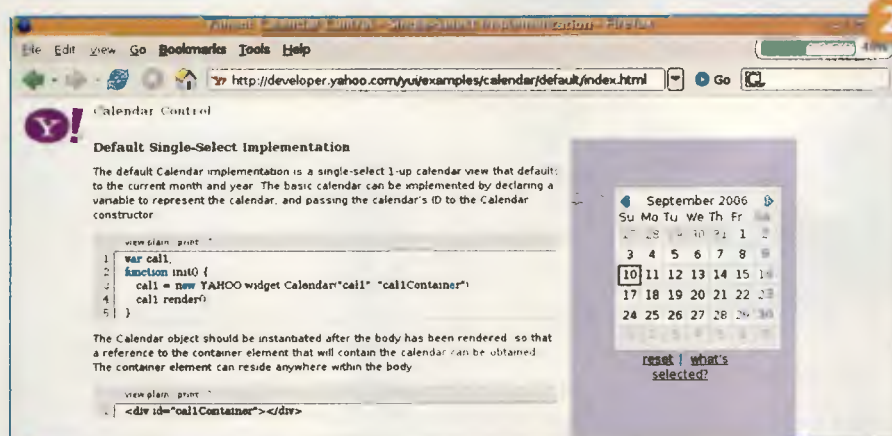
There'll be no surprises here, but in order to use Dojo you'll need to point to the actual JavaScript code files on the server. Here's an example of just how simple it is to do that:

```
<script type="text/javascript" src="/path/to/
dojo/dojo.js" />
```

It was mentioned earlier that Dojo had the smarts to define which parts of the framework would be used for each page. This code demonstrates how to specify this, using a

Google Web Toolkit is a very good code generator.





The calendar widget in Yahoo! AJAX Library in action.

require construct that is similar to the kind of require and import directives available in object-based languages like PHP or Java.

```
<script type="text/javascript">
  dojo.require("dojo.event.*");
  dojo.require("dojo.io.*");
  dojo.require("dojo.widget.*");
</script>
```

Of course, one of the most common uses of an Ajax framework is to build interactive forms. Standard HTML has a number of form control tags, such as this one, which present a simple text field:

```
<input value="default">
```

To use the Dojo version of a form input, the code would need to look more like this:

```
<input dojoType="ComboBox"
value="default">
```

In this case, the input will be rendered as a Dojo ComboBox, which is a graphical Dojo widget. The benefit here is that the HTML is still written in a standard syntax (so the page will still work with JavaScript disabled), but the widget will display as long as Dojo is able to run. This elegant backwards compatibility makes Dojo very easy to integrate into your form code.

If you need to build a web site in strict HTML, then the above examples are not entirely appropriate since, although written in a familiar style, they incorporate invalid attributes according to W3C standards.

Dojo also enables you to use alternative methods without needing the invalid attributes. For example:

```
<input class="dojo-ComboBox"
value="default" dataUrl="comboBoxData.js">
```

Overall, Dojo is an exceptionally easy-to-use and powerful framework, with only the documentation letting it down. It's well worth a look by any developer and is particularly well-suited to someone learning Ajax. Environments supported by Dojo are Windows, Linux and Mac. Supported browsers include IE, Firefox, Safari, Opera and Konqueror.

OTHER FRAMEWORKS AND LIBRARIES

Google Web Toolkit (GWT). Unique among other toolkits, in that you actually write your web application in Java and the GWT compiler converts your class files into browser-compliant JavaScript and HTML. Essentially, the GWT is a code generator — and a very good one, since both Google Maps and Google Mail were developed with it. The popularity and robustness of these examples proves that the framework is very powerful and that the applications developed with it are scalable for large numbers of users.

Note: If you don't know Java (remember, Java and JavaScript are completely separate languages sharing little in common other than the name), then another framework may be better-suited to your needs.

Below is part of some Java code that was extracted from a simple GWT example. When compiled with the GWT compiler, it shows the output given in ☞. As you can see, there's no JavaScript or HTML to be found anywhere here.

```
public void onModuleLoad() {
  b = new Button("Click this button", new
  ClickListener() {
    public void onClick(Widget sender) {
      Window.alert("Hello, AJAX");
    }
  });
}
```

```
}
});
RootPanel.get().add(b);
}
```

The GWT is an excellent choice for Java programmers who are comfortable with the Java Swing or AWT environments and are looking to develop Ajax web applications. It can be a good choice in getting an application up and working quickly.

Google has numerous samples online, as well as example code, documentation and developer forums. There is even a decent Getting Started guide that gives you step-by-step instructions on using the framework.

Yahoo! AJAX Library (YAL). The first thing you'll notice about this framework (or library, as Yahoo! refers to it) is the professional feel of the package, the quality of the documentation and the excellent use of popular standards throughout.

The YAL developers seem to have had a very clear design approach and the Ajax widgets themselves were very stable. The combination of the excellent documentation and consistent rendering behaviour across the whole library makes YAL a pleasure to work with.

☞ This should give you a sense of the quality of this library. As can be seen, it shows the calendar widget in use, with relevant documentation onscreen and source code. This is very impressive — especially given the price tag.

Although it has fewer features than Dojo, the YAL is definitely worth considering.

Atlas Framework. Although aimed at Microsoft ASP.NET developers, Atlas is freely available and intended to work across Internet Explorer, Firefox, Mozilla and Safari with zero modifications. It's good to see that Microsoft acknowledges that the internet community is populated by people using a wide variety of browsers. Having a framework which supports only one browser would be of little use to a web developer.

One of the downsides of Atlas is that it seems to be tightly integrated with Visual Studio, requiring that product before installation. However, on the upside, the documentation is very comprehensive and, for Microsoft ASP.Net developers, Atlas makes a lot of sense.

qooXDoo. Touted as the new era of web development, qooxdoo promotes itself as one of the most complete open source Ajax frameworks. It includes support for professional JavaScript development, a state-of-the-art GUI toolkit and high-level client-server communication. Basically, it's well worth the time required to check it out, and we found their online demonstrations of the framework to be very impressive. ☞

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MStation Tower

When the forklift arrived with this box we couldn't believe it had iPod speakers inside. Weapons dealers used to unpacking Russian X-31 Anti-Ship Missiles will be right at home with the setup here. There's a huge cylindrical sub-woofer and two satellite speakers that sit on top. Unfortunately, we can't recommend the sound quality: boomy and imprecise on the bass end and totally lacking in any mid-range... a clapped out 15-year-old mini-hi-fi sounded considerably better. Also, when an iPod is docked, the external input is shut-off and inaccessible.

USBCELL

This seems like a great idea in theory — AA batteries which you can recharge by plugging them into the USB port on a PC or notebook. The site says it will take five hours to charge them to 90% capacity via USB, which seems like ages, but if you're not in a rush then you could do it while you're working. The USBCELL web site said the batteries were only for sale in the UK when we checked, but this product was so quirky, we just had to include it. You can leave your details with them for more info about sales in other countries (so fingers crossed).

Sony GPS-CS1

Now this is just showing off. Plug this little dooba-wacky into your digital camera or camcorder and it records the exact location of where you've taken your photos. Back at your PC, you can link the photos to Google Maps, showing you exactly on the map where each photo was taken. Family slide-shows of the overseas holiday will never be the same. Sony says the unit will last for up to 14 hours and it loads the tracking data onto its own internal memory. The only catch is you need a Windows PC to download the log data.

Kaiser Baas digital photo frame

This is the sort of futuristic device that could potentially send grumpy technology-haters into a frenzied tirade about "newfangled gizmos". If that's your thing, then grab this and load your happy snaps via the memory card slot. The frame will play them as a slideshow and with music if you want, via a built-in speaker. It will also play AVI movie files, which could make for some trippy visualisations to go on your sideboard. You can rotate the images and the unit also comes with a remote control. Plus, you can buy interchangeable frames.

.. CONTACT MStation
.. ONLINE www.mstationaudio.com.au
.. PRICE \$549
.. VERDICT ★★☆☆☆

.. CONTACT Moixa
.. ONLINE www.usbcell.com
.. PRICE £12.99 (2-cell pack)
.. VERDICT ★★☆☆☆

.. CONTACT Sony
.. ONLINE www.sony.com.au
.. PRICE \$229
.. VERDICT ★★★★★

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iCush

Want to come over and have a go on my vibrating seat? Xbox sessions will have a whole new edge after you experience the iCush, an "entertainment chair" that is being marketed without any funny connotations whatsoever. When you plug the iCush in, your butt feels things — things like in-game explosions (no comment) and tackles. Also, if you're into it, you can connect an iPod and get a soothing massage to Phil Collins' "Another Day in Paradise". iCush also has a carry handle (take it to a friend's house and share the joy!).

CONTACT Homedics
ONLINE www.homedics.com
PRICE \$199
VERDICT ★★★★★

Altec Lansing VS2321

We have no idea what neodymium speakers are, but we know we want them. This speaker set has a front-firing, long-throw subwoofer and neodymium up the wazoo. Crank it up and you'll feel a resonating thump in your chest as you rock to the beats of The Knack's "My Sharona", but remember to turn it down afterwards: from bitter experience we've found that random ring-tone web popup ads can scare the living heck out of you at high decibels. The VS2321 package includes two speakers and one subwoofer (which is rated at 16 watts).

CONTACT Audion Innovation
ONLINE www.audion-mm.com
PRICE \$92
VERDICT ★★★★★

Take This Stuff and Hack It!

It's not often you see a book that combines robotic lawn trimmers, LCDs for doll houses, and turning PSPs into Wi-Fi sniffers. The trimmer idea is a curious one — take a remote-controlled car and wire on a whippersnapper, then attach the brains from a commercially sold robotic vacuum cleaner like the Roomba. Cute idea, but there's not much in the way of detailed instructions. No matter; half the fun is working it out. Some of the other ideas aren't really hacks at all (like using an electronic studfinder so you can hang a painting).

CONTACT McGraw-Hill
ISBN 0071477373
PRICE \$50
VERDICT ★★★★★



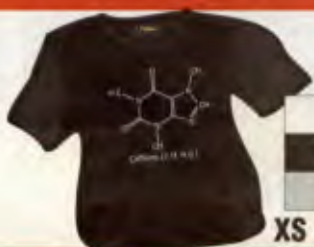
3D Game Textures

Did you know you can get a degree in making computer games? By the look of this book, it could involve a lot of discussions about shadows on crates. Other big topics are door knobs, pipes and ledges, textures and Photoshop Layer Effects. If you've ever wondered what goes into creating on-screen environs of the likes of Half-Life 2, or F.E.A.R., this will give you some idea. It can take a lot of patience, though. The generic "medieval" examples here are a bit old-hat, but fans of the upcoming Bioshock will know how impressive this stuff can get.

CONTACT Elsevier
ISBN 0240807685
PRICE \$84
VERDICT ★★★★★

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Scarface

Dan Chiappini says hello to his little friend and rebuilds an empire.

CONTACT Vivendi Games
ONLINE www.scarfacegame.com/us
PRICE \$69.95

✓ Guns; violence; becoming a drug lord.

✗ Nasty controller system.

VERDICT ★★★★★

First off, let me set the mood by saying that there have been some horrible (and I mean diabolical) movie-turn-game adaptations (and vice versa). While traditionalists will tell you there'll never be a game to match the calibre of a big budget Hollywood flick, with the budgets game developers are throwing at their titles, we remain ever hopeful someone will prove us wrong.

I do sympathise with the developer, Radical, I really do. How do you make a character as large and complicated as Tony Montana come to life, put users in the hot seat to control the man and expect them to get that same feeling they did watching the film?

Rather than turn the game into a playable version of the movie (we really wanted to play out the chainsaw scene), *Scarface* the game has been written as more of a sequel, exploring the possibility of Tony's escape at the end of the film and being forced to rebuild his empire from scratch.

Scarface gives you the chance to turn back time: first disposing of Tony's assassin, then gunning your way out of your mansion as it gets stormed by would-be killers. Once out, your first job is to pay off the Vice to get your place back. Once done, you hit the streets, lining up deals with small-time dealers to get back to the top. Along the way you'll need to rip off and kill rival gangs to reclaim your throne as you set up fronts to move coke.

After such an incredibly powerful role, it's humbling to be running the streets, scoring and doing other



people's dirty work to build up street cred — but it feeds the storyline very well.

As your profile and bankroll increase, you can hire henchmen, buy luxury cars and get some tradeys in to fix bullets holes in your walls. The game relies heavily on you building "balls" — this can be done by taunting victims as you blow them away, dangerous driving and intimidating people on the street who dare oppose you. Once your balls meter is full, you can unleash Tony's furious retribution in first-person mode, giving you unlimited ammo, reduced damage and restoring health for every kill you make.

There's no two ways about it: this game is as gritty as the movie and the voice acting is superb. Watch Tony fly off the hook at the drop of a hat — and pray you're not on the nasty end of it.

In-game audio plays a huge part of the story and features an arm-long list of top-shelf acting talent including Ricky Gervais, Ice T, Cheech Marin, Jason Mewes and B-Real, to name just a few. If that doesn't get your motor running, there's also a complete '80s music collection, the ability to make your own mix tapes and the original movie soundtrack — so you can have "Rush Rush" pumping as you



carve up a rival dealer with a machete. Tony does maintain his strict ethics though and, while you can draw your weapon, you can't gun down innocents.

The game is a multi-platform release, but unfortunately the PC version suffers the old console "portitis", leaving you with keys that can't be remapped and a clumsy keyboard palm mash to perform frequent tasks.

Still, Tony's character has been painstakingly modelled and is one of the closest look-alikes we've seen, all the way down to his mannerisms. Unfortunately, the world environment seems to have suffered a bit as a consequence.

With this new chapter to a well-known and much-loved story, Radical has done a great job and captured the grit and nastiness of the 1980-something drug-addled era — plus given Tony his second wind and provided us with hope for future movie-to-game licences.



PREVIEW

Dark Messiah of Might and Magic

Declan Kennedy checks if swords and sandals get stabby, stealthy and spellcaster-iffic.

A game which provides a player with an open-ended experience is one of the most satisfying things in life that a person can partake in whilst fully clothed. The big problem, though, is one of scope: too broad and the game doesn't reveal itself fully to any but the most dedicated of players; too narrow and it becomes a linear experience masquerading as a sandbox.

Dark Messiah is a game which appears to be attempting to sit somewhere between these two extremes. While it features some very RPG-like character development, leading to a fair degree of flexibility as far as play style is concerned, the environments are necessarily linear in order to reveal the plot to the player.



It's not bad at it, either. The preview that we were sent featured a small sampling of maps from various points in the game, including a tutorial level, the defence of a city from invading forces at night, and a trip to a Greek island which begins on a sunny beach before you need to descend deep into various ruins and tunnels.

At each starting point we were given a set of skill points to spend, allowing us the opportunity to sample some of the different play styles that the game allows. They can be roughly summed up as combat, stealth and magic, but the skill point system lends itself to a high degree of flexibility as far as character builds. Combat will see you fending off waves of foes with large, melee weaponry. This is an almost overwhelming experience on its own: the first-person melee combat in this game is the best that we've seen. The player can easily grab items like barrels and rocks to hurl at their foes and can even use a feature from Duke Nukem 3D that we were happy to see return — the "Mighty Foot".



Players can gain an advantage by kicking their enemies back in order to get some distance, or even to force the opponent over a cliff or into some convenient nearby spikes and flames, which are in abundance (OH&S anyone?). Stealth is pretty much the same as in Thief — so, rather good to say the least.

One big problem is that it takes a lot of points into the archery combat tree in order to be able to one-shot foes at range, which is a necessary skill for the sneaky amongst us.

Still, the AI responds as expected to the discovery of bodies — foes will lose your trail if you choose to use sounds and shadows to distract them (and generally react in a way which makes stealth a challenging yet satisfying experience).



Copyright infringement warning: "BY THE POWER OF GREYSKULL!"

CONTACT	Ubisoft
ONLINE	darkmessiahgame.uk.ubi.com
PRICE	\$99.95
✓	Detailed interactive environments; strong character development.
✗	Graphics look a little dated; not as open-ended as the competition.
RELEASE DATE:	26 OCTOBER 2007

Magic's preview feels slightly underdeveloped. We found that healing was the only magical skill that seemed worthwhile for most character builds. To be fair, this could simply have been a play-style issue. Still, from our experience here, it seemed as though putting all of your points in magic would be suicidal in the later areas where the opponents are tougher and more numerous.

The game uses the Source engine. To be honest, this is the worst aspect of what we've seen to date. Even on a top-notch system, the Source engine is looking seriously dated when compared with more modern engines. What it does very well (and always has) is physics — everything moves around, objects break convincingly and gravity isn't just an afterthought.

Overall, we were very excited by what we saw from this title. Although lacking the huge open-world experience, the character-building system works well to allow for a very flexible flavour of gaming. The demo is available, so if you can afford 1.2GB of bandwidth, we strongly recommend that you check it out.



Ultimate Ghosts 'n Goblins

Dan Chiappini gets his platemail on and saves some classic damsels.

There's something wonderful about nostalgia teamed with the games industry's need to only innovate when they need the cash injection. Remember all those games you fawned over and ploughed dollar after dollar into at the local arcade? (Damn you Virtua Cop 2!) Well, chances are most of them are available to purchase again with one of the current-generation consoles.

Ghosts 'n Goblins is one of those classic games that helped build Capcom's fan base and, even after the arcade machine, NES, SNES and Gameboy variants, they've decided it's time to come back for another shot at your gaming attention.

There was a bit of argument in the office about whether the Ultimate in the title denoted this would be the last (and perhaps the best) in the series — and after playing it, I seriously hope it's not the end of this chapter.

The new version UGNG is most similar to the Super Nintendo version and adds new power-ups and weapons but maintains the familiar side-scrolling action and difficulty that made it so popular all those years ago.

Even in the easiest mode, UGNG will give seasoned players a decent workout, while in the tougher, advanced mode, you're probably going to have to dig deep into your

heyday of awesome thumb dexterity to complete the levels.

The game looks quite good for a 2.5D side scroller with animated cut scenes, but unfortunately the control system is a bit of a nightmare. Arthur has learned a few new tricks, like hanging onto ledges, but the double-jump (and positioning yourself to quickly move between platforms before they disappear) can be a nightmare.

Worth adding to any serious retro-gaming collection, it's tough enough to offer plenty of replayability — and does the trick for a quick pick-up and goblin thrash on the go.

CONTACT Capcom
ONLINE ww2.capcom.com/ugng
PRICE \$79.95
PLATFORM: PSP

✓ Ghosts and goblins.

✗ Control system; very hard.

VERDICT ★★★★★



Faces of War

William Maher masters the art of shooting (and pronouncing "Panzerschreck").

Memo to the people that made this game: it's hard! Time and time again I found myself deep into a campaign, only to find half my squad wiped out and seemingly endless waves of enemies bearing down upon me. At times it felt like there was some trigger point I was waiting for (but which never came).

Instead of controlling huge armies, Faces of War (FoW) takes you into a more personal fight, controlling small squads on the

streets and shores of locations from World War II.

There's a lot of running around micro-managing troops as you battle your way through WWII scenarios from the Allied, German or Polish point of view. In the heat of battle you'll find yourself taking control of individual troops to zero in on annoying snipers or advancing tanks.

It's all good, but boy is it fiddly. In most top-down strategy games like this you'll either be running

around fighting, or "mining" for resources. There's no mining in FoW, but there's lots of mundane chores that seem like they could have been left out.

Case in point: fixing a broken tank involves first selecting a soldier, clicking on the view icon or pressing X, left-clicking on the tank and transferring the repair kit to your backpack. Then you have to click the repair icon and... you get the idea. In another spot I got stuck for 15 minutes trying to

work out how to unhitch the artillery gun from the trailer.

Things smooth out once you get into the battle proper, but it's no ride in the park. There's lots of action here — at times you feel overwhelmed by gunfire and explosions. Lumbering tanks are truly menacing, with the ability to destroy houses and take out the side of buildings by driving into them. In conclusion, Faces of War offers a lot of fun (if you can master the missions).

CONTACT Ubisoft
ONLINE www.facesofwargame.com
PRICE \$89.95

✓ Squad-play adds interest.

✗ Training missions a chore; confusing mission system.

VERDICT ★★★★★



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[Insert x-files theme here]



In case you weren't sure, some people are *really* passionate about their browsers. Field-tramplingly so, in fact, and this pic (above) is the evidence. What you see here is the latest Firefox publicity stunt by the Oregon State University Linux Users Group, who constructed this 45,000 square foot crop circle in Amity, Oregon. The indentation has a diameter of 220 feet and was completed within

24 hours by a team of 12 mostly OSU students.

Frankly, I'd counsel caution to any OSU first-years planning a return trip next year in order to stage a gigantic Tux sequel — you wouldn't want to unwittingly surprise a drunken, slurring and aggressive farmer in those darkened crops.

Of course, OSU has only *claimed* credit for the feat. The *real* story could be that E.T.'s spaceship is actually the exact shape of the Firefox logo. (But we doubt it.) Remember back in the '90s when people actually gave a damn about crop circles?



Universal Sushi Buffet

Feeling peckish but need a small storage solution? Well, if you answered "yes" to that unlikely question then Pretec Electronics Corp. just might be able to help (provided you like Japanese food). Yes folks, it's Sushi and USB — together at last. Now, we've seen USB do "wacky" before, but I'm not sure if we've ever seen USB do "wacky in a foodstuff style". And now — *finally* — we can tick that box. Pretec's i-Disk Sushi range comes in a range of "flavours", each offering a "unique" and "delicious" appearance. Sometimes, we understand. Other times, we just want to say, "Wasabi the Fukusa?"



I HAVE A DREAM!

George W. Bush, 43rd President of the United States and one of the great philosophers of our modern age, once said, "The momentum of freedom in our world is unmistakable — and it is not carried forward by our power alone. We can trust in that greater power who guides the unfolding of the years. And in all that is to come, we can know that his purposes are just and true." Now, some of you may have thought he was talking about God — but at APC we'd like to think he was actually referring to *software*. Yes, software! "Software Freedom Day" was recently celebrated by the galvanised geeks of Melbourne. The local event brings folk together to "celebrate digital

freedom" and constitutes part of a "global, grassroots effort to tell people about the virtues and availability of Free and Open Source Software". Kylie Davies (president of one of the co-organisers, Computerbank Victoria) announced that "[if] it weren't for Software Freedom, we would not be able to do the work we do." This year, amongst other lessons in liberation, the Linux Users of Victoria, who for the past two years "have taken Software Freedom to the streets" with CD handouts, hosted an "installfest" (sort of like proclaiming a manifesto, but with an operating system). Kind of gives you a whole new angle on the "war on terror", doesn't it? **ETC**



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Case Type	Mini Tower	Mini Tower	SOHO File Server
Case Colour	Beige	Black	Black
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Power Supply	Smart Power 2.0 350 W ATX12V v2.01	Smart Power 2.0 400 W ATX12V v2.01	Smart Power 2.0 500 W ATX12V v2.01
Drive Bays	8	8	10
Cooling Capacity			
- Rear	1 x 120mm TriCool (standard)	1 x 120mm TriCool (standard)	1 x 120mm TriCool (standard)
- Front	1 x 80mm (Optional) Front	1 x 80mm (Optional) Front	1 x 80mm (Optional) Front
- Chassis	1x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA	1x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA	1 x 80mm (Optional) HDD 1x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA

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Pushing performance specs generates heat, and that can compromise reliability and component life. The advanced cooling ability of DHX heat sinks keeps your memory safe and reliable even as you push it to the limit. Under the name XMS2 Dominator, this DHX technology will be showing up on both Corsair parts designed for extreme overclocking and on memory designed for performance computing and gaming.

Also Featuring Enhanced Performance Profiles (EPP)

As with all new Corsair performance memory, XMS2 Dominator modules feature EPP, the new open standard for the Serial Presence Detect (SPD) jointly developed by NVIDIA and Corsair. EPP simplifies overclocking for beginners and provides unparalleled control for experts.



An optional fan (not shown) provides even more cooling and protection.



Corsair's proprietary DHX technology dissipates heat two ways: it draws heat away from the module through the RAMs and provides an additional path for heat transfer within the module through the ground plane!

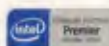


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TK-102 PS/2 \$13.00
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HM-5001 \$19.00

USB Optical Mouse



HM-2026 \$10.00



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HM-2008 \$12.00

PS/2 or USB Optical Mouse



HM-2031 \$10.00



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HM-2001 \$10.50

USB Net Phone with Screen Display

- Selection of ring tones
- Built in hold function
- Displays contact list, dialled calls, incoming calls, missed calls, send voice email, skype out balance checking
- Quick buttons setting, audio message setting, language choice
- Plug and play, fully compatible with SKYPE
- LCD display screen



PD-250 \$38.00

USB Net Phones

- Supports Skype, Net2Phone, MSN, SJ Phone, X-LNE and more
- With keypad and ringer, crystal clear sound effect
- USB 1.1 compatible - no external power required
- PC to PC and PC to Phone operation
- Function support: adjustable volume, page turning and contact lists



PD-222 \$38.00



PD-227 \$19.00



USB Car Charger

- Multi-function USB car charger, 4 USB ports and 1 DC port, can be charge for most products
- DC 12V-24V of the car will transform into 6V-7V
- DC port is used for various serial mobiles such as Nokia, Samsung, Motorola, Sony Ericsson



PD-100 \$10.00

iPOD Car Charger

- Works with 12V auto cigarette lighter
- Circuitry design protects your iPod from overcharging and short-circuiting
- Charge and listen to your iPod at the same time
- Comes with a fully retractable and white coil cord



PD-160 \$10.00

Negative-Ion Generator

- Creates ions and puts them into air and by removing mildew, dust and smoke to improve air quality
- Increase the concentration of negative ions in the air and produces trillions of the ions per second



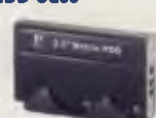
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USB 2.0 + 1394 Combo 3.5" HDD Case



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SATA External HDD Case



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Internal 3.5" Card Reader

- Easy front panel access
- USB 2.0 multcard reader with one front panel USB 2.0 from MB
- Black or Beige available



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- 1 x 1394 port from MB
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USB Sound Card



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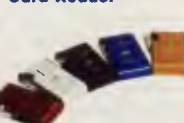
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USB 2.0 External HDD Case



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3.5" \$25.00
5.25" \$48.00

24 in 1 USB 2.0 Card Reader



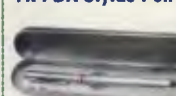
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USB Fan, USB Light



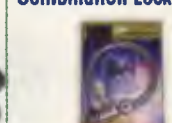
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Slimline Clam CD Cases



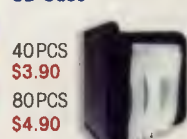
10PK \$2.50

CD Sleeves



100PK \$3.50

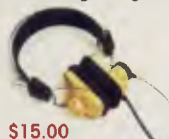
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128PCS \$8.90

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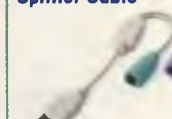
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Canon Ink Cartridges

Model	Genuine	TONNY
BCI-24BK	\$14.00	\$5.60
BCI-24C	\$33.00	\$7.20

Model	Genuine	TONNY
BX-3	\$49.00	\$28.00
BC-02	\$39.00	\$28.00
BC-03	\$38.00	\$28.00
BC-05	\$50.00	\$30.00
BC-20	\$49.00	\$28.00
BCI-3eBK	\$25.00	\$ 8.80

Model	Genuine	TONNY
BCI-3eC/M/Y	\$19.00	\$6.40
BCI-6BK	\$24.00	\$6.40
BCI-6C/M/Y	\$24.00	\$6.40
BCI-6G	\$24.00	\$6.40
BCI-6R	\$24.00	\$6.40
BCI-6PC/PM	\$24.00	\$6.40

Model	Genuine	TONNY
BCI-15BK	\$24.00	\$6.40
BCI-16C	\$44.00	\$7.20
BCI-16C	\$44.00	\$7.20
BCI-21BK	\$13.00	\$4.90
BCI-21C	\$28.00	\$6.40

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Model	Genuine	TONNY
PGI-5BK	\$22.50	\$8.50
CLI-8BK	\$22.50	\$8.50
CLI-8C/M/Y	\$22.50	\$8.50
CLI-8PC	\$22.50	\$8.50
CLI-8PM	\$22.50	\$8.50

Epson Ink Cartridges

Model	TONNY	Model	TONNY	Model	TONNY
T001	\$18.90	T038	\$ 9.60	T0561/2/3/4	\$8.90
T003	\$ 9.90	T039	\$10.60	T5591/2/3	\$8.90
T005	\$18.00	T0321	\$10.80	T5594/5/6	\$8.90
T007	\$ 9.30	T0322	\$ 7.50	T0621	\$8.90
T008	\$13.00	T0323	\$ 7.50	T0631/2/3/4	\$7.50
T009	\$15.00	T0324	\$ 7.50	S020089	\$9.90
T013	\$ 4.50	T0422C/M/Y	\$ 9.50	S020093	\$5.10
T014	\$ 7.90	T0461	\$ 8.90	S020097	\$9.00
T017	\$ 9.70	T0472/3/4	\$ 8.90	S020108	\$6.50
T018	\$10.60	T0491/2/3	\$ 8.90	S020110	\$9.50
T026	\$ 9.70	T0494/5/6	\$ 8.90	S020187	\$5.10
T027	\$12.40	T0540/1/2	\$ 8.90	S020189	\$6.50
T028	\$ 9.70	T0541/2/3/4	\$ 8.90	S020191	\$9.00
T029	\$10.60	T0547/8/9	\$ 8.90	S020193	\$9.50

HP Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
51625A (#25)	\$46.00	\$28.00	C6625A (#17)	\$48.00	\$30.00
51626A (#26)	\$46.00	\$28.00	C6656AA (#56)	\$32.00	\$24.00
51629A (#29)	\$46.00	\$28.00	C6657AA (#57)	\$51.00	\$32.00
51633MA (#33)	\$41.00	\$32.00	C6658AA (#58)	\$37.00	\$26.00
51645A (#45)	\$46.00	\$24.00	C8727A (#27)	\$31.00	\$24.00
51649A (#49)	\$48.00	\$28.00	C8728AA (#28)	\$35.00	\$26.00
C1823D (#23)	\$51.00	\$30.00	C8765WA (#94)	\$31.00	\$27.00
C4841/2/3/4AA (#10)	\$46.00	\$28.00	C8767WA (#96)	\$42.00	\$33.00
C4836/7/8A (#11)	\$48.00	\$18.00	C9363WA (#97)	\$45.00	\$36.00
C5010DA (#14)	\$47.00	\$26.00	C8721WA (#02)	\$28.00	\$16.00
C5011DA (#14)	\$35.00	\$24.00	C8771/2/3WA (#02)	\$16.00	\$11.00
C6578D (#78)	\$51.00	\$30.00	C8774/5WA (#02)	\$16.00	\$11.00
C6614A (#20)	\$44.00	\$24.00	C9351AA (#21)	\$24.00	\$21.00
C6615DA (#15)	\$44.00	\$24.00	C9352AA (#22)	\$27.00	\$23.00

Brother Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
LC-21BK	\$30.00	\$7.90	LC-800BK	\$32.00	\$7.90
LC-21C/M/Y	\$17.00	\$7.50	LC-800C/M/Y	\$18.50	\$7.50
LC-02BK	\$21.00	\$7.90			
LC-02C/M/Y	\$11.00	\$7.50			
LC-04BK	\$28.00	\$7.90			
LC-04C/M/Y	\$16.00	\$7.50			
LC-47BK	\$32.00	\$7.90			
LC-47C/M/Y	\$18.50	\$7.50			

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Lexmark Ink Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
12A1970	\$48.00	\$32.00	10N0016 (#16)	\$46.00	\$36.00
12A1980	\$56.00	\$35.00	10N0026 (#26)	\$49.00	\$39.00
17G0050	\$46.00	\$32.00	15M0120 (#20)	\$53.00	\$41.00
17G0060	\$53.00	\$35.00	18C0031 (#31)	\$43.00	\$35.00
13400HC	\$53.00	\$36.00	18C0034 (#34)	\$43.00	\$35.00
13619HC	\$52.00	\$38.00	18C0035 (#35)	\$45.00	\$37.00
10N0217	\$33.00	—	18L0032 (#82)	\$47.00	\$39.00
10N0227	\$35.00	—	18L0042 (#83)	\$53.00	\$41.00

HP Black Toner Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
92298A	\$139.00	\$ 65.00	C8061X	\$165.00	\$ 85.00
C3906AF	\$ 95.00	\$ 49.00	Q1338A	\$189.00	\$ 95.00
C3903A	\$120.00	\$ 59.00	Q2612A	\$ 95.00	\$ 59.00
C3909A	\$220.00	\$ 95.00	Q2613A	\$ 95.00	\$ 59.00
C4092A	\$ 87.00	\$ 49.00	Q2613X	\$125.00	\$ 69.00
C4096A	\$135.00	\$ 65.00	Q2610A	\$155.00	\$ 75.00
C4127A	\$145.00	\$ 65.00	Q2624A	\$ 96.00	\$ 59.00
C4127X	\$169.00	\$ 80.00	Q5942A	\$190.00	\$ 95.00
C4129X	\$210.00	\$ 95.00	Q5942X	\$279.00	\$125.00
C4182X	\$239.00	\$135.00	Q5949A	\$ 99.00	\$ 59.00
C7115A	\$ 89.00	\$ 49.00	Q5949X	\$169.00	\$ 75.00
C7115X	\$115.00	\$ 65.00	Q6511A	\$169.00	\$105.00

TONNY Colour Toner Cartridges

Printer Model	Model	Genuine	TONNY
HP LJ1500/2500, Canon LBP2410	C9700A (BK)	\$115.00	\$ 65.00
	C9701/2/3A (CYM)	\$135.00	\$ 79.00
HP LJ4600	C9720A (BK)	\$199.00	\$155.00
	C9721/2/3A (CYM)	\$262.00	\$185.00
HP LJ4500, Canon LBP2460/2040	C4191A (BK)	\$119.00	\$ 59.00
	C4192/3/4A (CMY)	\$165.00	\$ 69.00
HP LJ8000	C4149A (BK)	\$150.00	\$ 89.00
	C4150/1/2A (CMY)	\$225.00	\$155.00
Epson C900/1900	S050100 (BK)	\$ 99.00	\$ 79.00
	S050097/98/99 (CMY)	\$210.00	\$119.00
Epson C1000/C2000	S050033 (BK)	\$119.00	\$ 90.00
	S050034/5/6 (CMY)	\$249.00	\$119.00

Samsung Toner

Model	Genuine	TONNY
ML-1210D3	\$ 94.00	\$ 59.00
ML-1650D8	\$185.00	\$105.00
ML-1710D3	\$ 98.00	\$ 59.00
ML-2010	\$103.00	\$ 59.00
ML-2150D8	\$185.00	\$140.00
ML-4100D3	\$ 99.00	\$ 83.00
ML-4500D3	\$119.00	\$ 73.00
ML-6060D6	\$155.00	\$ 93.00
SCX-4216D3	\$ 99.00	\$ 69.00
SCX-5312D6	\$ 95.00	\$ 79.00
SF-5100D3	\$ 89.00	\$ 59.00

Brother Toner Cartridges

Model	Genuine	TONNY
TN-100	\$ 29.00	\$23.00
TN-200	\$ 42.00	\$23.00
TN-2025	\$ 74.00	\$59.00
TN-300	\$ 42.00	\$23.00
TN-3060	\$125.00	\$65.00
TN-8000	\$ 43.00	\$23.00
TN-6600	\$ 99.00	\$65.00
TN-7600	\$125.00	\$65.00

Canon Toner Cartridges

Model	Genuine	TONNY
EP-22	\$ 99.00	\$49.00
EP-25	\$ 99.00	\$49.00
EP-26	\$109.00	\$69.00
EP-32	\$145.00	\$65.00
EP-52	\$185.00	\$80.00
E-31	\$189.00	\$85.00
FX-3	\$132.00	\$59.00
CART-303	\$ 83.00	\$59.00
CART-U	\$ 99.00	\$69.00

Epson Toner Cartridges

Model	Genuine	TONNY
EPL-5700	\$190.00	\$49.00
EPL-5900	\$205.00	\$49.00
EPL-6200	\$215.00	\$49.00

Lexmark Toner Cartridges

Model	Genuine	TONNY
Optra E210	\$129.00	\$59.00
Optra E310	\$225.00	\$69.00
Optra E/E+	\$135.00	\$59.00
X215	\$105.00	\$59.00

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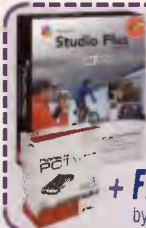


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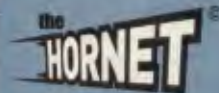
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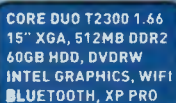
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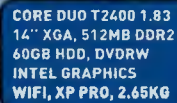


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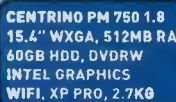
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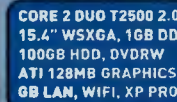
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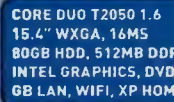
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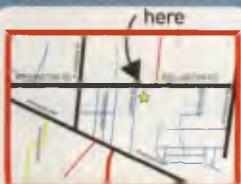


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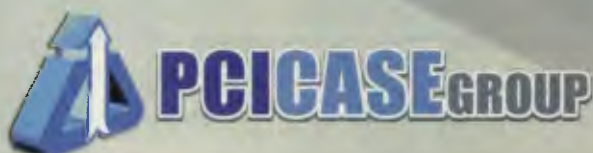
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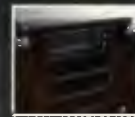


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LC 800 Bk & Colour	\$ 7.50/\$7.00
LC 21/04/02 Bk & Colour	\$ 7.50/\$7.00

Refill Kits(30ml)/Bulk Ink(100ml)

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HP/Lexmark -Black, Cyan Magenta, Yellow	4 colour
Epson	6 colour

HP/Canon Black Toner Cartridges-Rem:

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HP-92298X / Canon-EPE	\$ 70.00	HP-Q5942X	\$125.00
HP-C3903A / Canon-EPV	\$ 55.00	HP-Q5949X	\$ 75.00
HP-C3906A / Canon-EPA	\$ 48.00	HP-Q6511X	\$125.00
HP-C4092A / Canon-EP-22	\$ 48.00	Canon-EP-26/Cart-U	\$ 65.00
HP-C4096A / Canon-EP-32	\$ 62.00	Canon-E-31	\$ 80.00
HP-C4127X / Canon-NP-52	\$ 75.00	Canon-FX3	\$ 55.00
HP-C4129X / Canon-NP-62	\$ 90.00	Canon-FX-4	\$ 60.00
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HP-C8061X	\$ 83.00	Canon-Cart N	\$110.00
HP-Q2612A/Q2613A	\$ 55.00	Canon-Cart W	\$100.00
		Canon-Car 303	\$ 55.00

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TN-8000	\$ 22.00	DR3000 (Drum)	\$105.00
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ML-1710D	\$ 65.00	SCX-4216	\$ 65.00
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HP 3500	(Q2670A-Q2673A)	\$135.00 ea
HP 2550	(Q3960A-Q3963A)	\$100/\$110 ea
HP 8500/8550	(C4149A-C4152A)	\$ 90/\$150 ea
HP 4500/LBP-2040	(C4191A-C4194A)/EP-83	\$ 70/\$85 ea
HP 2500/LBP-2410	(C9700A-C9703A)/EP-87	\$ 80/\$95 ea
HP 4600/4650	(C9720A-C9723A)	\$150/\$180 ea
Epson C900/C1900	(S050100/97/98/99)	\$ 95/\$115 ea
Epson C1100/N	(S050190/187/188/189)	\$ 98/\$130 ea
Samsung	CLP-500B/C/M/Y	\$120 ea

Lexmark Inkjet/Toner Cartridges-Rem:

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X215	\$ 65.00	E210	\$ 65.00
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Epson Black Toner Cartridges-Rem:

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EPL-5900/5900L/6100	S050087	\$ 65.00
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EPL-6200	S050166	\$ 70.00

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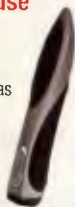
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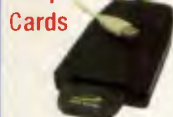
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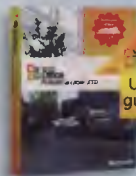
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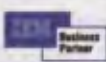
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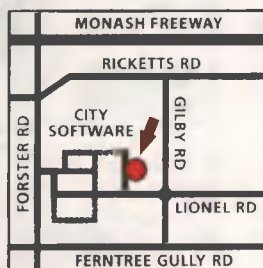
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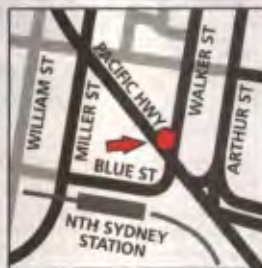


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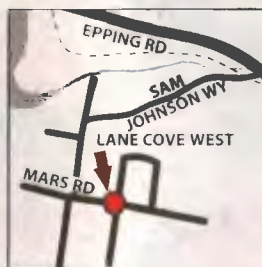


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Email: melbournecity@csw.com.au

Open Hours

8.30am to 6.00pm,
Monday to Friday
10.00am to 4.00pm Saturday AEST.



Lane Cove Corporate Office

Lane Cove, NSW
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Open Hours

8.30am to 5.30pm,
Monday to Friday AEST.

Terms & Conditions

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Buying the latest IT Hardware?
Why not extend your warranty?
See page 2 for details!

UP TO
5 Year
Warranty

Great Christmas Gift Ideas

Logitech Harmony 880 Remote Control

Optimised for complicated HDTV and PVR systems, the Harmony 880 helps you tame tough configurations like switching your television between video aspect ratios depending on the program source. The interactive color display lets you quickly choose a 16:9 ratio for movies and HDTV, or a standard 4:3 ratio for basic television programming.

Our Price:
\$229
Save: 171
WebCode: L063498

42Inch / 106CM Plasma Television

HDTV Ready
16:9 Screen Aspect Ratio
160 / 160 Viewing angle
1500cd/m² Luminance
10000:1 Contrast Ratio
VGA / DVI input
Sleep / Alarm timer
SRS trusurround

Our Price
\$1787
Save **\$212**
WebCode: CHA0001

Hauppauge Digital Set Top Box DEC2000T STB

The DEC2000T is a standard definition digital TV set top box with a difference - it has a USB port allowing capture of your favourite Digital TV programs to hard drive.

Our Price
\$132
Save **\$167**
WebCode: HAU0016

Apple iPod Nano 4GB Green

With its new anodized aluminium enclosure and rounded edges, iPod nano looks as dazzling as it feels. And it's sleeker than ever - 3.5 inches tall, 1.6" wide, and just over quarter of an inch thin. Play your music even longer between charges-up to a full day.

Our Price
\$288
Save **\$41**
WebCode: APP0242

Epson 4 x 6 Glossy Photo Paper 50 Sheets

DURABrite Photo Paper is perfectly matched to Epson's Ink and ideal for printing photographs. In combination with DURABrite Ink it is best for creating high colouration and glossiness.

Our Price
\$16
Save **\$4**
WebCode: EPA1735

HP Deskjet D2360 Inkjet Printer

The Deskjet D2300 Colour Inkjet Printer series is designed for people looking for a simple, reliable printer that offers ease-of-use and the ability to print everything from crisp, sharp black and white documents to vivid colour photos.

Our Price
\$62
Save **\$7**
WebCode: HPD2360

Logitech R-20 2.1 Speakers

The Logitech R-20 stereo speakers offer optimal audio in a sleek, compact design. Ideal for Games, MP3 players, CD Players with a smooth Wood Subwoofer. Ready for plug and play

Our Price
\$37
Save **\$13**
WebCode: LOG3489

Kaiser Baas Digital Photo Frames

The perfect complimentary product for digital cameras! Show all your digital photos as slideshows with background music in this contemporary design digital photo frame.

Our Price
\$252
Save **\$47**
WebCode: KAB0003

Powercell AA Battery Charger

The powercell battery charger is perfect for digital camera, portable Audio players and children toys. It can recharge 2 or 4 pieces of AA, AAA NiMH/Ni-Cd batteries.

Our Price
\$33
Save **\$17**
WebCode: POW2006

D-Link ADSL Modem with Wireless Router

This device gives your business a convenient and cost-effective way to install a fast secure, bottleneck-free network link to the outside world.

Our Price
\$123
Save **\$57**
WebCode: DLK5109

TRENDnet Mini 2.1CH USB Speakers

The TRENDnet Mini 2.1CH USB Speakers is an innovative way to boost the sound and multimedia capabilities of your notebook. Compact Design - a compact speaker system that you can easily carry along with your laptop.

Our Price
\$48
Save **\$41**
WebCode: TDN0136

HP iPAQ RW6828 Handheld

The HP iPAQ rw6800 Multimedia Messenger series is pure personality in a small light form that has it all. It provides a multitude of connectivity and communication modes and superior multimedia power with 3D sound from dual stereo speakers.

Our Price
\$988
Save **\$85**
WebCode: CLS5410

Telstra 5400 Cordless Telephone

Blue backlit multi-line display 100 name & number Phonebook. Text messaging compatible, handsfree on handset Multi-handset compatible. Flashing Message Indicator. Calling Number Display 30 number callers list Digital DECT technology

Our Price
\$66
Save **\$13**
WebCode: CLS5400

Pinnacle Studio 10 Plus Titanium

Pinnacle Studio Plus Titanium combines Studio's legendary ease of use with added power and control to further enhance your video for preserving and sharing on DVD and beyond.

Our Price
\$176
Save **\$23**
WebCode: PIN0140

HP 56 & 57 Ink Twin Pack

Print photo realistic images and save money when purchasing HP twin packs of tri colour & mono cartridges.

Our Price
\$63
Save **\$23**
WebCode: HP12017

Sandisk Sansa e260 4GB MP3 Player

Everything you need to play digital music - in vibrant colour! The Sansa e200 Series MP3 players are the flagship products of SanDisk's audio line.

Our Price
\$277
Save **\$72**
WebCode: SAN0055

Nokia 3120 Mobile Phone

The funky, yet chic Nokia 3120 is packed with features allowing you to mix business with pleasure: MMS, Java technology, Tri-band and more. Complement it with stylish enhancements now.

Our Price
\$167
Save **\$32**
WebCode: NMP3120

Kodak C643 6MP Digital Camera

Impressive features. Intuitive design. Great price. 6.1 MP for prints up to 20 x 30 in. (50 x 75 cm) 3X optical zoom lens 2.4 in. (6.1 cm) indoor/outdoor colour display, VGA video (640 x 480 at 30 fps), Picture enhancing features, On-camera Share button

Our Price
\$187
Save **\$62**
WebCode: KOD0643

Great Christmas Gift Ideas

Christmas 2006

Adobe Photoshop Elements 5.0

Bring out the best in your photos! Adobe Photoshop Elements 5.0 software combines power and simplicity so you can do more with your photos. Instantly fix flaws or adjust color and lighting with new advanced controls

MASSIVE
45% SAVING

Our Price
\$121

Save
\$99

WebCode: ALD9588

Spyware Doctor

Spyware Doctor is a top-rated malware & spyware removal utility that detects, removes and protects your PC from thousands of potential spyware, adware, trojans, keyloggers, spybots and tracking threats.



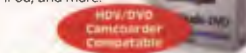
Our Price
\$45

Save
\$4

WebCode: PCT0001

Sony Vegas Movie Studio+DVD Platinum 7

With Vegas Movie Studio+DVD Platinum Edition you can import and edit video in nearly any format including HDV. Drag and drop to create movies and slide shows with effects, transitions, and music. Share movies on DVD, PSP, iPod, and more.



Our Price
\$198

Save
\$41

WebCode: SNY1024

FOR THE FIRST 100 BUYERS
TWO FREE MOVIE PASSES TO
THE NEWLY RELEASED MOVIE
IN NOVEMBER

Pre-order now stock available November 30th

Take a Walk on the Wild Side

Team up with a cast of crazy critters, unleashing your animal instincts in Open Season™, the game – a riotous romp in the great outdoors in which a rowdy brood of forest animals turns the tables on a bunch of unsuspecting hunters.

Our Price:
\$45

WebCode: UBI7716

FREE
MOVIE PASSES

Scientific Brain Training

Pump up your memory with highly playful and interactive games! This memory program will allow you to improve your memory in a fun and engaging way.



Our Price
\$24

Save
\$6

WebCode: MAN008

Sudoku XP

More than enough puzzles to satisfy the most ardent Sudoku fan! 10 levels of difficulty, thousands of Sudoku puzzles, simple controls and a bright interface, auto save and load functions, automarking features so you can quickly see what numbers can be put in each square.



Our Price
\$17

Save
\$3

WebCode: MAN0087

Flight Simulator X Deluxe

Flight Simulator X Deluxe will awe flight simulator fans and real pilots alike. All-new eye-popping graphics, actual missions to accomplish and a wider range of airports to visit recreate the experience of being a pilot, right down to the smallest detail.



Our Price
\$93

Save
\$27

WebCode: MSC3029

Corel® Snapfire™ Plus

Ignite Photo Fun!

Whether you want to complete fun photo projects or share photos in new, entertaining ways, Snapfire Plus is for you!



Our Price
\$74

Save
\$25

WebCode: COR8934

Sony Cinescore

Cinescore software automatically generates fully composed, multigenre production music using royalty-free themes in a variety of popular styles.



Our Price
\$295

Save
\$34

WebCode: SON0058

Norton Confidential

Safeguard your personal information from online identity theft. Norton Confidential protects you when you're most vulnerable: at a Web site while banking or shopping online, and about to submit passwords, account numbers, or other confidential information.

Also available for Mac



NEW!
Online
Transaction
Protection

Our Price
\$69

Save
\$10

WebCode: SYM9729

Nero 7 Premium Reloaded

Nero 7 Premium Reloaded enables you to experience your digital media in completely new and innovative ways. With the addition of Nero Home media manager, you can now have the complete PC and TV experience.



Our Price
\$154

Save
\$45

WebCode: NER0012

Roxio Easy Media Creator 9

Your Music, Memories, Movies and More

Get the most out of your digital videos, music and photos. Creator 9 lets you create, manage and enjoy them the way you want, on your computer. Home theatre, or TV - and even on the move with your iPod, PSP or mobile phone.



Our Price
\$148

Save
\$12

WebCode: ADA9518

Roxio DVD Copy 2 Premier

New Roxio Easy DVD Copy 2 Premier takes you well beyond other copying software. Make fast, high quality copies of movies, music CDs and DVDs.



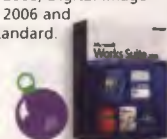
Our Price
\$50

Save
\$10

WebCode: ADA7222

Microsoft Works Suite 2006

Five great titles in one affordable package. Includes full versions of Word 2002, Works 8, Encarta Standard 2006, Digital Image Standard 2006 and Money Standard.



Our Price
\$131

Save
\$38

WebCode: MSC2935

ZoneAlarm Internet Security Suite 6.5

The complete Internet security solution. Based on the brilliant ZoneAlarm 3-level Firewall, with Network and Program Firewall; Operating System Firewall; Integrated Anti-Spyware and Antivirus; Identity and Privacy Protection; Spy Site Blocking; Game Mode.



Our Price
\$73

Save
\$26

WebCode: CHE0018

True Image 9.1

A complete PC & file backup solution! Create an exact copy of your PC for a full backup. Backup and restore specific files and folders, instantly restore the entire disk - no reinstallation required!



Our Price
\$89

Save
\$19

WebCode: MAN0069

Globetrotter 2

The Amazing Race Around the World! Beat the clock and win the race! Travel the world - visit exciting and unusual destinations. Live the life of a photo-journalist. Travel by train, plane, boat, bus or metro to exciting destinations, from Mount Everest to the Maldives.



Our Price
\$40

Save
\$9

WebCode: MAN0086

Corel Paint Shop Pro® Photo XI

The easiest way to get professional-looking photos - fast! Corel Paint Shop Pro Photo XI is the ideal choice for anyone who wants extraordinary photos.

BEST VALUE FOR MONEY!!!



Our Price
\$157

Save
\$42

WebCode: COR8932

Logitech V20 Notebook Speakers

Finally, get great audio from your laptop with the Logitech V20 Notebook Speakers. The USB port provides power and digital quality audio—no other cables necessary.



Our Price \$99 **Save** \$31
WebCode.....LOG3508

Belkin Universal Notebook Travel Surge

The Belkin notebook travel surge protector, featuring the ultra-compact in-line design makes it perfect for both business and personal travel. Compatible with 3-prong adapters available on Dell, Compaq, and many other laptop computers.

2 prong version (BEL0278) \$67



Our Price \$67 **Save** \$32
WebCode.....BEL0277

Excel DVD-R 8X 50pc Spindle

The ideal choice for high resolution video and images. Create, edit and archive home movies & digital photos while storing and accessing data from one disc. DVD-R discs capture 4.7GB. Printable surface.



Our Price \$19 **Save** \$16
WebCode.....EXC0001

HP Proliant ML150 - Server

- Part Number: 380189-011
- Processor: Xeon 3GHz Upgradable to 2 Processors
- Memory (Ram): 512MB PC2700 DDR
- Cache memory: Integrated 2MB Level 2 cache
- Hard Drive: None Installed
- HDD Controller: Single Channel Ultra320 SCSI Adapter in a PCI slot
- Optical Storage: 48x IDE CD-ROM Drive
- Graphics: Integrated ATI RAGE XL Video Controller with 8MB SDRAM
- Ethernet: Broadcom 5721 PCI-Express Gigabit NIC
- Ports: Parallel, 1 Serial, VGA, Kbrd, Mouse, 2 USB, 1 RJ45
- Slot Totals: 4 x 64-bit/66MHz PCI-X, 1 x PCI-Express, 1 x 32-bit/33MHz PCI
- Power Supply: 600 Watts, non-hot plug, non-redundant
- Form Factor: Tower (SU)
- Warranty: 3 Years

Great Business Server

Our Price \$1657 **Save** \$138
WebCode.....HOS0073

Business Partner



Server



Image used for illustration purposes only.

Desktops



Image used for illustration purposes only.

Series	dx2200	dx7300
Manufacturer #:	RL443PA#ABG	RN770PA#ABG
Processor:	Intel P4 Hyper 524 3.06 GHz	Intel PD 925 3.0GHz
Memory (Ram):	512MB Ram	1GB Ram
Video Card:	ATI Radeon Xpress 200 Chipset	Intel Graphics Media Accelerator 3000
Hard Drive:	80GB SATA	160GB Ultra SATA
Optical Storage:	48X32X Combo Drive	16X DVD +/- Burner
Ethernet:	Realtek 8100C Network Controller	Intel 82566DM Gigabit ethernet
Operating System:	Win XP Home	Win XP Pro
Warranty:	1 year limited warranty	1 year limited warranty

Our Price \$827 **Save** \$22 **Our Price** \$1247 **Save** \$52
WebCode.....HCP0131 WebCode.....HCP0118

Series	NX7400 Notebook PC	NX6310 Notebook PC
Manufacturer #:	RM758PA	RM721PA
Processor:	Intel Core 2 Duo T5500 1.66GHz	Intel Celeron M 430 1.73GHz
Memory (Ram):	512MB DDR2 SDRAM 667Mhz	512MB DDR2 SDRAM 533Mhz
Video Card:	Intel GMA 950 (224MB Shared)	Intel GMA 950 (128MB Shared)
Hard Drive:	60GB 5400rpm SMART Drive	40GB 5400RPM
Optical Storage:	Dual Layer DVD+-RW	DVD/CD-RW Combo Drive
Display:	15.4" TFT	15.4" TFT
Modem/Ethernet:	56K V.92, 10/100, WLAN	56K V.92, 10/100 NIC, WLAN
Pointing Device:	Touchpad	Touchpad
Operating System:	Microsoft Windows XP Pro	Microsoft Windows XP Home

Our Price \$1847 **Save** \$52 **Our Price** \$967 **Save** \$32
WebCode.....HCN0075 WebCode.....HCN0073

Series	NX6320 Notebook PC	NX6320 Notebook PC
Manufacturer #:	RM709PA	RM712PA
Processor:	Intel Core 2 Duo T5500 1.66Ghz	Intel Core 2 Duo T5600 1.83Ghz
Memory (Ram):	512MB DDR2 SDRAM 667Mhz	512MB DDR2 SDRAM 667Mhz
Video Card:	Intel GMA 950 (128MB Shared)	Intel GMA 950 (128MB shared)
Hard Drive:	60GB 5400rpm SMART drive	80GB 5400rpm SMART drive
Optical Storage:	Dual Layer DVD+-RW	Dual Layer DVD+-RW
Display:	15.0" XGA TFT	15.0" XGA TFT
Modem/Ethernet:	56K V.92, Gigabit NIC, WLAN	56K V.92, Gigabit NIC, WLAN, Bluetooth
Pointing Device:	Touchpad	Touchpad
Operating System:	Microsoft Windows XP Pro	Microsoft Windows XP Pro

Our Price \$1853 **Save** \$46 **Our Price** \$2137 **Save** \$62
WebCode.....HCN0070 WebCode.....HCN0071

Notebooks



HP NX6320 notebook displayed

1 Year Warranty



HP NX9420 notebook displayed

1 Year Warranty

See page 2 for details!

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Did you know that you can get up to 3% rebate on every order? www.csw.com.au/smartbuy

HP Pavilion A1555A Media Center PC

Processor: Intel Pentium D 925 3.0GHz
Memory (Ram): 1GB DDR2 SDRAM 533MHz
Video Card: nVidia GeForce 7300
Hard Drive: 200GB 7200rpm SATA
Optical Storage: SuperMulti Drive Lightscribe
Modem/Ethernet: 10/100 LAN
Card Reader: 9 in 1 Digital Media Reader
Operating System: Microsoft Windows XP Media Center Edition
Audio: High Definition Audio 7.1 Surround Sound

Software Included

Microsoft® Works 8.0
Microsoft® Money 2005 Standard
Adobe® Acrobat® Reader®
Microsoft® Encarta® Encyclopedia Standard 2006
HP DVD Play
RealOne Player™
Microsoft® Windows Media Player 10
Sonic Digital Media Plus
• Record Now • Easy Archive
• My DVD Plus • Express Labeler
HP Photosmart Premier
Windows Moviemaker 2.1
Norton Internet Security 2006
Windows Moviemaker 2.1
Norton Internet Security 2006



Our Price \$1529 **Save \$71**

WebCode.....HPR1555

Compaq Presario SR1925AN Media Center PC

Processor: AMD Athlon 64 3500+ 2.2GHz
Memory (Ram): 512MB DDR2 SDRAM 533MHz
Video Card: nVidia GeForce 6150LE 3D Graphics
Hard Drive: 160GB 7200rpm SATA
Optical Storage: SuperMulti Drive Lightscribe
Display: 17" VS17E Flat Panel Monitor
Modem/Ethernet: 56K V.92, 10/100 NIC
Card Reader: 9 in 1 Digital Media Reader
Operating System: Microsoft Windows XP Media Center Edition
Audio: High Definition Audio 7.1 Surround Sound

Software Included

Microsoft Works 8.0
Microsoft Money 2005 Standard
Adobe Acrobat® Reader®
Microsoft Encarta® Encyclopedia Standard 2006
HP DVD Play
RealOne Player™
Microsoft Windows Media Player 10
Sonic Digital Media Plus
• Record Now • Easy Archive
• My DVD Plus • Express Labeler
HP Photosmart Premier
Windows Moviemaker 2.1
Norton Internet Sec 06



Our Price \$1246 **Save \$53**

WebCode.....COP1926

LG External 16x USB Dual Layer DVD Burner

A leading manufacturer of optical storage devices, LG's quality is recognised by customers around the world, based on experience and innovative practices. This model is compatible with all DVD formats and incorporates SuperLink Buffer Under Run Prevention Technology so you don't end up with coasters.



Our Price \$165 **Save \$134**

WebCode.....LGE0044

HP Pavilion DV2040TX Notebook

Processor: Intel Core Duo T2050 1.6GHz
Memory (Ram): 1GB DDR2 533MHz
Video Card: NVIDIA GeForce Go 7200 128MB
Hard Drive: 80GB 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 14.1" WXGA BrightView Widescreen
Modem/Ethernet: 56K V.92, 10/100 LAN, WLAN
Webcam: 1.3 Mega Pixel
Operating System: Microsoft Windows XP Pro

Software Included

Microsoft Works 8.0
Microsoft Money 2005
Microsoft Encarta Standard 2006
Microsoft Windows Media Player
Symantec Norton Anti-Virus 2006
Symantec Norton Internet Security 2006
Sonic Digital Media Plus
Muvue Auto Producer DVD Edition
HP QuickPlay 2.1
Adobe Acrobat Reader 6.0
HP Photosmart Premier



Our Price \$1946 **Save \$53**

WebCode.....HPR2040

Compaq Presario C302TU Notebook

Processor: Intel Celeron M processor 420 1.6GHz
Memory (Ram): 256MB DDR2 533MHz
Video Card: Intel GMA 950 (64MB Shared)
Hard Drive: 60GB 5400 RPM
Optical Storage: DVD/CD-ROM-RW Combo
Display: 15.4" WXGA BrightView Widescreen
Modem/Ethernet: 56K V.92, 10/100 LAN, WLAN
Pointing Device: Touchpad
Operating System: Microsoft Windows XP Home

Software Included

Microsoft Works 8.0
Microsoft Money 2005
Microsoft Encarta Standard 2006
Microsoft Windows Media Player
Sonic Digital Media Plus
Muvue Auto Producer DVD Edition
Adobe Acrobat Reader 6.0
Symantec Norton Anti-Virus 2006
Symantec Norton Internet Sec 06



Our Price \$978 **Save \$21**

WebCode.....COP302

Belkin Vertical Slip Case For Notebooks

Portable storage for the traveling notebook user. In addition to its lightweight design it features stow-away handles and non-slip sides for secure transport. Also available in Red & Beige



Our Price \$33 **Save \$6**

WebCode.....BEL2896

HP Pavilion DV9018TX Notebook

Processor: Intel Core 2 Duo T5500 1.66GHz
Memory (Ram): 1GB DDR2 667MHz
Video Card: NVIDIA GeForce Go 7600
Hard Drive: 120GB 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 17.0" WXGA+ HD BrightView Widescreen
Modem/Ethernet: 56K V.92, Gigabit LAN, WLAN, Bluetooth
Webcam: 1.3 Mega Pixel
Operating System: MS Win XP Pro

Software Included

MS Works 8.0
MS Money 2005
MS Encarta Standard 2006
MS Windows Media Player
Sonic Digital Media Plus
Symantec Norton Anti-Virus 2006
Symantec Norton Internet Sec 06
Muvue Auto Producer DVD Edition
Adobe Acrobat Reader 6.0
HP QuickPlay Direct 2.3
HP QuickPlay for Win 2.3



Our Price \$2486 **Save \$213**

WebCode.....HPR9017

Compaq Presario V6107AU Notebook

Processor: AMD Turion 64 X2 TL-50 1.6 GHz
Memory (Ram): 512MB DDR2 667MHz
Video Card: Nvidia GeForce Go 6150 (128MB Shared)
Hard Drive: 80GB 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 15.4" WXGA BrightView Widescreen
Modem/Ethernet: 56K V.92, Gigabit, WLAN, Bluetooth
Pointing Device: Touchpad
Operating System: MS Win XP Pro

Software Included

Microsoft Works 8.0
Microsoft Money 2005
Microsoft Encarta Standard 2006
Microsoft Windows Media Player
Sonic Digital Media Plus
Muvue Auto Producer DVD Edition
Adobe Acrobat Reader 6.0
Symantec Norton Anti-Virus 2006
Symantec Norton Internet Sec 06



Our Price \$1548 **Save \$251**

WebCode.....COP6107

Linksys Cordless Internet Telephony Kit (CIT200)

- Complete cordless Internet phone solution for Skype
- Connects Skype to Skype
- Connects Skype to regular phone lines (with Skype InOut service)
- Plug and dial - easy to install and easy to use



Our Price \$150 **Save \$40**

WebCode.....LNK5463

Powercell AA Battery Charger

The power cell batter charge is perfect for digital camera, portable Audio players and children toys. It can recharge 2 or 4 pieces of AA, AAA NiMH/Ni-Cd batteries.

includes 4 AA Rechargeable Batteries



Our Price **\$33** Save **\$26**

WebCode POW2006

TFT Screen Clean

For use on all coated and non-coated Laptop, Notebook, TFT, Plasma, LCD, PDA, GPS, Mobile, basically any Screen or Monitor. Extensively tested by Users and Manufacturers, Laboratory and Industry test have shown that Cleansafe will clean and protect all screen surfaces.



Our Price **\$15** Save **\$7**

WebCode CLE0001

Maxtor OneTouch Mini Portable 60GB External HDD

- Ideal storage and backup solution for people on the go
- USB 2.0 and 1.1
- Maxtor OneTouch button - the easy way to make backup copies of your files
- Quick and easy installation
- Plug and play storage



Our Price **\$148** Save **\$21**

WebCode MAX0083

Toshiba Tecra A6 Notebook Bundle

Processor: Intel Core Duo T2300 1.66GHz
Memory (Ram): 512MB DDR2 533Mhz
Video Card: ATI Mobility Radeon X1400 (128MB Shared)
Hard Drive: 60GB SATA 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 14.1" Widescreen XGA
Modem/Ethernet: 56K V.92, Gigabit Nic, WLAN,
Pointing Device: Touchpad
Operating System: Microsoft Windows XP Pro
Card Reader: 5 in 1

FREE TARGUS CARRY CASE



Our Price **\$1862** Save **\$503**

WebCode TOS13502

Satellite Pro L30 Notebook Bundle

Processor: Intel Celeron M 380 1.6GHz
Memory (Ram): 256MB DDR2 SDRAM 533Mhz
Video Card: ATI Radeon Xpress 200M (64MB Shared)
Hard Drive: 40GB SATA 5400 RPM
Optical Storage: CD-RW/DVD-ROM
Display: 14.1" Widescreen XGA
Modem/Ethernet: 56K V.92, 10/100 LAN
Pointing Device: Touchpad
Operating System: Microsoft Windows XP Home

FREE TARGUS CARRY CASE



Our Price **\$958** Save **\$290**

WebCode TOS11504

Satellite Pro A120 Bundle

Processor: Intel Core Solo T1400 1.83GHz
Memory (Ram): 512MB DDR2 533Mhz
Video Card: Intel GMA 950 (128MB shared)
Hard Drive: 60GB SATA 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 15.4" TFT Widescreen XGA
Modem/Ethernet: 56K V.92, Gigabit, WLAN,
Pointing Device: Touchpad
Operating System: Microsoft Windows XP Pro

FREE TARGUS CARRY CASE



Our Price **\$1547** Save **\$103**

WebCode TOS11027

ASUS F3JP Notebook

Processor: Intel Core Duo T5500 1.66GHz
Memory (Ram): 1GB DDR2 SDRAM 667Mhz
Video Card: ATI X1700/512Mb HyperMemory
Hard Drive: 80GB SATA 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 15.4" WXGA + Colourshine
Modem/Ethernet: 6K V.92, Gigabit, WLAN, Bluetooth
Optical Device: Webcam
Pointing Device: Touchpad
Operating System: Microsoft Windows XP Pro
Card Reader: 8 in 1 Built in

FREE BAG & OPTICAL MOUSE



Our Price **\$1986** Save **\$213**

WebCode ASU0622

ASUS F3JV Notebook

Processor: Intel Core 2 Duo T7200 2GHz
Memory (Ram): 1GB DDR2 SDRAM 667Mhz
Video Card: NVIDIA GeForce GO7600/512Mb
Hard Drive: 120G SATA 5400 RPM
Optical Storage: Dual Layer DVD+/-RW
Display: 15.4" WXGA + Colourshine
Modem/Ethernet: 56K V.92, Gigabit, WLAN, Bluetooth
Optical Device: Webcam built in
Operating System: Microsoft Windows XP Pro
Pointing Device: Touchpad
Card Reader: 9 in 1 Built in

FREE BAG & OPTICAL MOUSE



Our Price **\$2683** Save **\$216**

WebCode ASU0621

ASUS W6FP Notebook

Processor: Intel Core 2 Duo T5600 1.83GHz
Memory (Ram): 512MB DDR2 SDRAM 533Mhz
Video Card: Intel GMA 945GM (128MB Shared)
Hard Drive: 60GB 5400rpm SMART drive
Optical Storage: Dual Layer DVD+/-RW
Display: 13.3" WXGA + Colourshine
Modem/Ethernet: 56K V.92, 10/100 NIC, WLAN, B/tooth
Operating System: Microsoft Windows XP Pro
Pointing Device: Touchpad
Card Reader: 9 in 1 Built in

FREE BAG & OPTICAL MOUSE



Our Price **\$2817** Save **\$382**

WebCode ASU0626

See page 2 for details

SMART BUY club 3% rebate

Did you know that you can get up to 3% rebate on every order? www.csw.com.au/smartbuy

Palm TX Handheld

- Palm TX Handheld - Image Attached
- Built-in Wi-Fi and Bluetooth wireless technology
- High-res 320x480 screen, rotates to landscape or portrait
- 128MB1 flash memory keeps your information safe
- Browse the web and send email2
- View, edit, and create Word, Excel, and PowerPoint compatible files3
- View photos and videos, play MP3 files and podcasts4
- MultiMediaCard, SD, and SDIO expansion card compatible
- Intel 312MHz processor



Our Price \$487 **Save \$12**
WebCode.....USR6581

HP Ipaq HX2790 Pocket PC

- Intel PXA270 Processor 624 MHz
- Integrated biometric fingerprint reader
- Integrated Wi-Fi (802.11b) 1
- Integrated Bluetooth wireless technology1
- Integrated Compact Flash type II (CF) and Secure Digital (SDIO) slots
- HP ProtectTools secured by Credant Technologies security application2
- 3.5" transfective TFT QVGA with 64K colour LED backlight display, landscape and portrait display modes
- Microsoft Windows Mobile 5.0 Software for Pocket PC, Premium Edition
- Removable/rechargeable 1440 mAh battery
- Pocket versions of familiar applications like Microsoft Outlook, Word, Excel, and PowerPoint
- Integrated Serial IR
- Protective plastic flip cover



Our Price \$758 **Save \$41**
WebCode.....CQ00138

I-Mate K-JAM Pocket PC Smartphone

- Microsoft Windows Mobile 5.0
- Quad Band Mobile Phone
- Built in QWERTY Keyboard
- Bluetooth Compatible
- MiniSD Card Expansion
- 64K Colour Screen
- Built in WIFI 802.11 B/G/E
- 1.3Megapixel Camera
- Integrated Antenna



Our Price \$1058 **Save \$141**
WebCode.....EL0001

O2 XDA Atom Executive Bundle

- A vital tool for professionals on the move, this slim PDA-phone is loaded with a faster processor, more memory, Personal Information Management (PIM) applications and handy tools to keep you on the fast lane in the competitive business world.
- Email anytime, anywhere via MS Outlook Mobile with Direct to Push Technology
 - Think faster with Intel XScale PXA 27x 520MHz
 - Enjoy instant online access with Wireless LAN
 - New Microsoft Windows Mobile 5.0
 - 2.0 Mega Pixel Camera with Strobe Flash



Includes Bluetooth Headset, Leather Pouch & Infrared Keyboard

Our Price \$1093 **Save \$136**
WebCode.....XDA0910

Acer D150 Portable Satellite Navigation System

Enjoy your travels with the d150 GPS system from Acer. From the intuitive touch-screen and CoPilot navigation software, to the voice-assisted directions and safety camera alerts, no matter what your destination, you can let the Acer d150 take you there.

Dynamic Route Guidance

The Acer d150 provides spoken turn-by-turn directions, including automatic route recalculations within seconds of a diversion.



Our Price \$497 **Save \$102**
WebCode.....ACE0064

TomTom Go 710 Portable Navigation

- **Easy to use:** Extra wide 4" LCD touchscreen gives you smart design and easy to use navigation literally at your fingertips
- **SD Card Containing Maps of Australia:** Navigate Australia door-to-door
- **Extra wide LCD screen:** 4 inch high quality LCD screen with crystal-clear 3D graphics
- **Clear spoken instructions:** Speaks some 36 languages in over 50 different voices
- **Hands-free calling:** Doubles as a hands-free car kit using Bluetooth technology. So you can make & receive calls as you drive with just a touch of the screen
- **Smart extras:** iPod® control, home dock and much more besides



Our Price \$927 **Save \$42**
WebCode.....TOM0003

Tom Tom One Portable Satellite Navigation Bundle

Your first step in car navigation? TomTom ONE combines ease of use, portability, TomTom's touchscreen technology and a sleek new design. Drivers can enjoy the benefits of a TomTom ONE immediately, thanks to TomTom's award-winning plug and drive navigation software pre-installed on a memory card. This means there is no need to download complicated software, just plug in and start using.

- Just plug in, switch on & GO car to car
- Touch-Screen Operation
- Clear and Accurate: Turn-by-turn voice instructions.



Bonus Carry Case

Our Price \$693 **Save \$106**
WebCode.....TOM0072

Navman iCN720 Satellite Navigation

The Navman iCN 720 is ready to use straight out of the box, so you discover this revolutionary way to use GPS navigation immediately. As well as being fully portable, so you can transfer your Navman GPS navigation between vehicles quickly and easily, the iCN 720 provides:

- Integrated NavPix software and camera so you can create your own location-referenced POI images
- 4" state of the art wide high-definition TFT touchscreen
- Latest GPS navigation software using SiRFstarII Generation 2 technology
- 3D door-to-door navigation using pre-loaded software
- Voice-guided, road specific directions
- Fuel and Park buttons to identify the nearest fuel or parking location



Our Price \$1047 **Save \$52**
WebCode.....NAV0012

Blueant X3 Micro Bluetooth Headset

The award winning X3 micro Bluetooth headset is one of the smallest and best performing headsets available in the world. Lightweight, stylish and comfortable, the X3 micro is the ultimate Bluetooth accessory for people on the move. The X3 micro can be paired to 3 different Bluetooth devices and comes with multiple charging options including USB, wall and in car chargers.



Our Price \$87 **Save \$42**
WebCode.....BLU0008

Blueant EzyTalk Bluetooth Handsfree Car Kit

The totally wireless EzyTalk Bluetooth plug and go handsfree car kit offers both excellent sound quality and zero installation costs. The microphone and speaker are integrated in a stylish and compact design with a DSP (Digital Sound Processor) to minimise echo effect and background noise. The EzyTalk is powered by the vehicle lighter socket.



Our Price \$118 **Save \$21**
WebCode.....BLU0009

Blueant Supertooth II Bluetooth Speakerphone

This speakerphone provides the user with exceptional sound quality via totally wireless Bluetooth technology. Mounted on a magnetic clip attached to the vehicle sun visor, the Supertooth II is the ideal Bluetooth handsfree solution requiring zero installation costs, as well as the ability to change vehicles quickly and easily.



Our Price \$159 **Save \$40**
WebCode.....BLU0007

PDA's & Satellite Navigation

RENT SMART
BECAUSE BUYING ISN'T

See page 2 for details!

Seagate 160GB Notebook Hard Drive

High Capacity and High Performance The Seagate Momentus hard drive family offers the perfect combination of performance and value. Featuring low power consumption and high shock tolerance, Momentus 2.5-inch hard drives offer a range of spin speeds to meet the needs of a variety of applications. Ideal for mainstream and high-performance notebook and laptop PCs 5400 RPM.

80GB (SGA0918) \$148
100GB (SGA0227) \$207
120GB (SGA0228) \$253



Our Price **\$367** Save **\$32**
WebCode SGA0316

Seagate Momentus 80GB Notebook Hard Drive

Seagate Momentus 7200 hard drives deliver maximum productivity with 7200 RPM to support the richest of multimedia applications. 100GB and 80GB capacities.

100GB (SGA0317) \$288



Our Price **\$236** Save **\$23**
WebCode SGA0273

Seagate Cheetah 73GB U320 SCSI Hard Drive

High-performance disc drives face the ultimate challenge in online, transactional applications, where every delay can mean lost revenue. That's why the enterprise depends on the unrivalled speed, reliability and efficiency of the Seagate Cheetah enterprise-class disc drives

146GB (SGA0093) \$1267



Our Price **\$616** Save **\$33**
WebCode SGA0072

Seagate 6GB Pocket Drive

Your digital world, safely in your pocket

The award-winning Seagate Pocket Hard Drive connects to any USB port, letting you take critical storage needs—on the go.

Key Features

- Carry up to 133 hours of digital music, 2560 digital photos, 8 hours of digital video or 4 PC games with you, wherever you go.
- At 8GB, the Pocket Hard Drive is the most convenient solution to carry, share and protect your digital content.
- Carry it all safely. The 8GB Pocket Hard Drive includes Secure Zone software for Windows PCs that allows you to password-protect important documents. Now you can carry your most sensitive files without fear of who might see them if you lose the drive.



Our Price **\$139** Save **\$10**
WebCode SGA0302

Seagate 120GB USB 2.0 Portable External Hard Drive

Taking your office on the road just got easier.

Perfect for the extreme traveler, these drives are exceptionally durable with a robust, rugged design, inside and out. They even resist scuffs and scrapes.

- These portable Seagate drives are highly compact, so they take up very little space in your jacket pocket, briefcase or on your desktop. And they weigh less than a pound.
- Safely and easily transport large amounts of data. The chrome-plated, aluminum enclosure absorbs shocks, ensuring reliable performance wherever your work takes you.

60GB Portable 160GB Hard Drive (SGA0176) \$149

80GB Portable 160GB Hard Drive (SGA0303) \$179

100GB Portable 160GB Hard Drive (SGA0091) \$219

120GB Portable 160GB Hard Drive (SGA0175) \$249



Our Price **\$238** Save **\$11**
WebCode SGA0175

Seagate Mirra 320GB Personal Server

The content-management solution that provides multiuser data protection, synchronization and sharing for homes and businesses

The On-Demand World connects all of us to our own personal digital content. Whether self-created or purchased, we want it wherever we are, whenever we want it. Now there is a product that takes care of our content and let's us get to it from anywhere, at any time.

Introducing the Mirra Sync and Share Personal Server, a content management solution that provides multiuser data protection, synchronization and sharing for homes and businesses. Mirra is the only product that combines all of these benefits, along with free online user accounts, allowing secure remote access and file sharing.

- Access—Retrieve digital content via the Internet any time.
- Share—Share files with anyone simply and securely.
- Sync—Sync content automatically between networked computers.
- Protect—Continuous data protection for networked Macs and PCs.
- Enjoy—Connect to your content from wherever you are.



Our Price **\$676** Save **\$23**
WebCode SGA0333

Seagate 250GB External Hard Drive

Taking your office on the road just got easier.

These easy-to-use external hard drives let you quickly store and protect your valuable digital memories, and safely duplicate important personal files.

- Protect your digital photos, home videos, music, DVDs and more. These Seagate hard drives are an affordable way to back up all your data from business documents to e-mails.
- Simply drag and drop your files to the drive icon—designed to be easy-to-use so you don't have to worry whether your files are safe.
- Compact and lightweight, these hard drives fit anywhere in your home or home office and also work great with notebook computers.
- Extend the life of your computer with the extra room you need to protect your valuable data—today, and in the years to come.

160GB External Hard Drive (SGA0238) \$171



Our Price **\$219** Save **\$10**
WebCode SGA0247

Seagate 750GB Pushbutton Backup External Hard Drive

Live large, store small.

These drives are beautifully engineered, inside and out, with state-of-the-art features and work-of-art design. They're exceptionally durable, conveniently portable and perfectly stackable.

- Never worry about losing important files. These drives will safeguard your valuable data for years to come.
- Sleek and elegant structure actually dissipates heat, so they run much cooler than any other external drives.
- Hot-swappable, so you can connect and disconnect without turning off your computer. And you have the versatility of connecting via USB 2.0 or FireWire.

200GB Pushbutton Backup External Hard Drive (SGA0089) \$219

300GB Pushbutton Backup External Hard Drive (SGA0242) \$293

400GB Pushbutton Backup External Hard Drive (SGA0243) \$427

500GB Pushbutton Backup External Hard Drive (SGA0304) \$534



Our Price **\$753** Save **\$46**
WebCode SGA0305

See page 2 for details!

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Maxtor OneTouch™ Mini Edition Portable External HDD

- Ideal storage and backup solution for people on the go
- USB 2.0 and 1.1
- Maxtor OneTouch™ button - the easy way to make backup copies of your files
- Quick and easy installation
- Plug and play storage



2.5 Portable Solution

Our Price **\$148** Save **\$21**

WebCode MAX0083

Our Price **\$218** Save **\$11**

WebCode MAX0084



Maxtor OneTouch™ III

- Simple Maxtor user-interface for drive management, security and backup scheduling
- System Rollback - rolls your system state back to a better point in time while keeping data current
- Sync automatic synchronization of data
- Maxtor OneTouch™ button - the easy way to make backup copies of your files
- Plug and play storage
- Quick and easy installation

USB2 - 80GB
Our Price **\$188** Save **\$11**

WebCode MXT0136

USB2 & FW - 300GB
Our Price **\$289** Save **\$10**

WebCode MXT0201

USB 2 & FW - 500GB
Our Price **\$436** Save **\$13**

WebCode MAX0082

Maxtor OneTouch™ III Turbo

- User-configurable RAID 0 and RAID 1
- FireWire 800 FireWire 400 USB 2.0 and 1.1
- PC and Mac compatible
- Maxtor OneTouch™ button - backup
- Maxtor DriveLock protects contents of drive if lost or stolen
- Cool operation and modular design for easy stacking
- Plug and play storage
- Creates historical backup versions with comprehensive system and data restore to a point in time

1 Terabyte



600GB
Our Price **\$572** Save **\$27**

WebCode MXT0252

1TB
Our Price **\$953** Save **\$46**

WebCode MXT0351



Maxtor Shared Storage™ Plus & Maxtor Shared Storage™ II 1TB

- Store and automatically backup the data on networked computers to one location for MAC and PC
- Up to 1TB capacity with simple user Interface RAID 1 and 0
- 2 USB ports for connecting and sharing printers and additional hard drives
- 10/100 Ethernet (MSS plus) Gigabit Ethernet (MSS II)
- Media server plays back digital photos, music and video to networked media/entertainment systems without a computer having to be on
- Access files from any networked PC, Mac or compatible networked media/entertainment system

MSS Plus 300GB
Our Price **\$338** Save **\$11**

WebCode MAX0071

MSS Plus 500GB
Our Price **\$528** Save **\$11**

WebCode MXT0104

MSS II 1TB
Our Price **\$1137** Save **\$62**

WebCode MXT0350

Maxtor Basics External Hard Drives

Easy add-on storage for home or office. Instantly expand your storage to hold your digital photos, music, and data files. PC compatible.

- Easy add-on storage for home or office
- Easy installation
- Perfect for digital photos, music, and data files
- Compact design includes stand for vertical orientation
- USB 2.0 and 1.1 compatibility
- Up to 500GB capacities
- PC compatible



300GB
Our Price **\$212** Save **\$37**

WebCode MXT0205

500GB
Our Price **\$427** Save **\$27**

WebCode MXT0208

Maxtor Ultra Series Hard Drive Kit

Satisfy your system's need for speed and capacity with the Maxtor Ultra Series Hard Drive kit. Up to 20% faster than standard 7200 RPM hard drives, the drive is designed for power users who demand the ultimate gaming, digital video, and audio experience. Featuring an 8MB cache, fluid dynamic bearing motor, and Ultra ATA/133 interface.



2000GB
Our Price **\$162** Save **\$7**

WebCode MXT0057

Seagate Barracuda 750GB PATA Hard Drive

High Capacity and Performance Solutions at a Great Value Barracuda 7200 hard drives from Seagate provide a wide range of capacities, fast performance and superb reliability, all at an excellent value. 5-year warranty.

250GB (SGA0169) **\$134**
320GB (SGA0916) **\$177**
400GB (SGA0171) **\$301**



Our Price **\$687** Save **\$112**

WebCode SGA0166

Seagate Barracuda 400GB SATA Hard Drive

- 7200 RPM with varying cache sizes matches storage performance to system needs

- Up to 750GB to meet the needs of all PC and cost-sensitive server needs

- Serial ATA (SATA) with native command queuing (NCQ) for enhanced performance and easy system integration

320GB (SGA0917) **\$184**
500GB (SGA0174) **\$417**
750GB (SGA0165) **\$733**



Our Price **\$308** Save **\$22**

WebCode SGA0172

KVM'S

Comsol USB 2.0 flashT2 Flash Drive

These pocket USB 2.0 flashT2 Storage Drives plug directly into any standard USB port and are compatible with both PC and Macs.

512MB (COM0107) **\$28**
2GB (COM0109) **\$87**
4GB (COM9162) **\$167**



1GB
Our Price **\$47** Save **\$12**
WebCode.....COM0108

Comsol USB VoIP Phone

Used in conjunction with Skype or similar software, the Comsol USB VoIP Phone offers you a complete free Internet telephony solution.

- SKYPE ready – talk for free with other Skype users
- Works with most leading VoIP providers
- Make huge savings on local, STD and international calls
- A-Tick



Our Price **\$45** Save **\$15**
WebCode.....COM0101

Comsol ServerLink Slim KVM Switches

With its slim size and ease of operation, it is an indispensable device for managing multiple PCs on your SOHO or Corporate desktop. Its compact and lightweight design fits comfortably anywhere on your desktop. Available in 2 or 4 port models. Both models include cables.

4 Port inc. cables (COM0095) **\$175**



2 Port inc. cables
Our Price **\$89** Save **\$10**
WebCode.....COM0094

Comsol ServerLink Altitude KVM USB & PS/2

The ServerLink Altitude offers a 19" rackmountable solution with PS/2 & USB support for your server and console. With its independent cascade port, multiple units can be daisy-chained up to 16 levels without losing any ports. Its fully featured, menu driven OSD offers more intuitive and convenient control.

Features include:

- USB and PS/2 interface support on both console and server side
- Direct channel selection and operation using front-panel push buttons and keyboard hotkeys
- Password protection for added security
- Independent cascade port
- 15 pin high density connectors for simple cable management
- Robust and durable in metal enclosure
- Cascadable to control up to 256 servers

USB and PS/2 Compatible



8 Port
Our Price **\$447** Save **\$52**
WebCode.....COM9154

1 Port
Our Price **\$687** Save **\$62**
WebCode.....COM9155

Comsol 1GB MicroFlash2

So compact and lightweight, it's perfect for portable storage.

Features include:

- Full compliance with USB 2.0 specifications
- Only 46mm long and 17mm wide
- Driverless under Windows ME/2000/XP and OS X

512MB (COM9159) **\$26**
2GB (COM9161) **\$82**



1GB
Our Price **\$42** Save **\$7**
WebCode.....COM9160

Comsol USB 2.0 Desktop Hubs

- Hi-Speed USB 2.0 Certified
- Blue LED to indicate power status
- Stylish aluminium casing
- Supports Plug & Play and Hot-Swapping
- Data transfer speeds up to 480Mbps
- No software required for easy installation

7 Port Hub (COM0117) **\$49**



4 Port
Our Price **\$32** Save **\$13**
WebCode.....COM0116

Comsol USB 2.0 External HDD Enclosures 3.5"

Features include:

- Lightweight aluminium housing for durability and portability
- High-performance USB 2.0 to IDE interface
- Screwless design for quick and easy assembly

2.5" (COM0171) **\$40**



Our Price **\$77** Save **\$12**
WebCode.....COM0172

Comsol ServerLink 15" LCD KVM Rack Drawers

These 1U console drawers combine a KVM, 15" TFT LCD, mouse & keyboard all in a standard 19" 1U drawer. Combining dual functionality of both PS/2 and USB connections, these multi-platform KVMs are designed to readily integrate into your existing network infrastructure.

8 Port (SER0005) **\$2327**
16 Port (SER0006) **\$2736**



Single Port
Our Price **\$1924** Save **\$75**
WebCode.....COM7510

Comsol ServerLink 17" LCD KVM Rack Drawers

These 1U console drawers combine a KVM, 17" TFT LCD, mouse & keyboard all in a standard 19" 1U drawer. Combining dual functionality of both PS/2 and USB connections, these multi-platform KVMs are designed to readily integrate into your existing network infrastructure.

8 Port (SER0007) **\$2576**
16 Port (SER0008) **\$2976**



Single Port
Our Price **\$2196** Save **\$103**
WebCode.....COM7605

ServerLink 19" LCD KVM Rack Drawers

These 1U console drawers combine a KVM, 19" TFT LCD, mouse & keyboard all in a standard 19" 1U drawer. Combining dual functionality of both PS/2 and USB connections, these multi-platform KVMs are designed to readily integrate into your existing network infrastructure.

8 Port (SER0014) **\$3126**
16 Port (SER0013) **\$3027**



Single Port
Our Price **\$2734** Save **\$65**
WebCode.....SER0012

GoldX 5m USB 2.0 Repeater Cable

Extend the distance of your USB peripherals beyond the maximum USB specification of 5 metres.

- Foil and Braid Shielding To Reduce EMI/RFI Interference
- Designed For High Speed Transmissions For Optimal Performance
- Flexible Cable
- Premium Quality
- Gold Connectors



Our Price **\$42** Save **\$7**
WebCode.....COM0211

GoldX USB to RS232 Serial Converter

Allows you to connect serial devices to a USB port on a computer.

- Easy to Install
- Full Plug-n-Play
- Supports over 1Mbps data transfer rate
- Supports remote wake-up and power management



Our Price **\$46** Save **\$9**
WebCode.....COM0212

GoldX USB to IEEE1284 Parallel Converter

USB to parallel converter cable that allows you to connect an IEEE-1284 parallel printer to a USB port on a computer.

- IEEE-1284 Nibble Mode Compatible
- Bus Powered (From PC's USB Host Adapter via Connecting Cable)
- Foil and Braid Shielding To Reduce EMI/RFI Interference



Our Price **\$42** Save **\$7**
WebCode.....COM0213

See page 2 for details

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Netgear RangeMax NEXT Wireless Router (WNR834B)

RangeMax NEXT wireless routers and adapters deliver maximum bandwidth and wireless coverage up to 270Mbps. Steady-Stream connections enable simultaneous use of voice, data, and multimedia applications throughout the home. Elegant preset internal antenna design and 11n-True-Test testing and tuning, ensures optimal out-of-box performance.



Our Price \$223 Save \$56

WebCode.....NTG7935

Netgear RangeMax NEXT Wireless Notebook Adapter (WN511B)

Experience the NEXT generation – up to 270Mbps wireless networking. Features include?

- Steady-Stream connection for your notebook computer at great range
- Complies with draft 802.11n, backwards compatible and with 11b/g WiFi
- Interoperates at up to 270Mbps with other Intensi-fi products
- Optimum performance & maximum coverage with preset internal antennas.

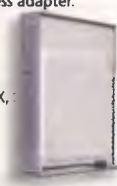


Our Price \$158 Save \$71

WebCode.....NTG7936

Netgear Rangemax Next ADSL Modem router (DG834PN)

- ADSL Internet service
- 2.4 GHz 802.11n draft specification adapter or 2.4 GHz 802.11 b/g wireless adapter. Alternatively, an Ethernet adapter and cable for each computer
- Microsoft® Windows® 98SE, Me, 2000, XP, Mac® OS, UNIX, or Linux®
- Internet Explorer® 5.0 or higher



Our Price \$229 Save \$100

WebCode.....NTG7582

Netgear ProSafe VPN Firewall 25

NETGEAR's FVS124G ProSafe Dual WAN VPN Firewall provides maximum performance, security, and reliability for small and remote offices. Four auto-sensing Gigabit ports deliver fast LAN connectivity; SPI firewall with 256-bit AES or 3DES encryption protects your network. 25 VPN connections with hardware-assisted throughput secure remote links.



Our Price \$334 Save \$85

WebCode.....NTG7354

Netgear Digital Entertainer (EVA700)

Bring all your digital content from your PC and the Internet directly to your TV. Digital content is changing the way you get entertainment. You often listen to music files and streaming audio, and watch video files and streaming video on your PC. However, now with the NETGEAR Digital Entertainer, you can enjoy your digital videos, photos and music on your home entertainment system or TV.



Our Price \$427 Save \$72

WebCode.....NTG7625

Netgear Super G Wireless ADSL Router with 4-port switch (DG834GT)

Lets you instantly and safely download large files, video conference, and distribute and play high-quality digital movies, photos, and MP3's. Protects your network against intruders. Super G for extra speed and range.



Our Price \$224 Save \$65

WebCode.....NTG7301

Netgear Storage Central (SC101)

Plug in up to 2 IDE drives of any size and create a central storage space for all your music, video, photos, games, and files that is accessible by all the PCs on your network. Keep your most valuable files safe with advanced, automatic backup features, and keep them private from other network users if desired.



Our Price \$190 Save \$44

WebCode.....NTG7350

Netgear Skype WiFi Phone (SPH101)

NETGEAR's Skype WiFi Phone is the first that lets you make free domestic and international calls to other Skype users over a wireless network without being tied to a PC. It's great to use at home or work where you have wireless access, whether or not it is WEP encrypted. For a small fee, you can have voicemail, or even talk with non-Skype users on ordinary phones at a discount.



Our Price \$370 Save \$129

WebCode.....NTG7626

Netgear ACE Configured Broadband VoIP Adapter (TA612V)

NETGEAR's TA612V Broadband Voice Adapter lets you experience fast network connectivity and has built-in a phone adapter that delivers convergent voice services (VoIP) to your home networking environment. Powerful, secure, private, and easy to use, but best of all, it helps save money on phone calls with VoIP phone service.



Our Price \$145 Save \$34

WebCode.....ACE0001

Netgear Broadband VOIP Adapter With 1 Phone Port (WGR613V)

Integrated Firewall, Router, DHCP and PPPoE Client.

- 1 VoIP port (POTS) for connection to a standard telephone. Allowing two separate phone numbers and accounts with your VSP.
- Quality of service (QoS) on voice call through prioritisation of voice data.
- WAN port for connection to your existing broadband modem.
- 3x LAN ports for connection to your existing network.
- 802.11G 54Mbps wireless access point.



Our Price \$182 Save \$47

WebCode.....NTG7611

Netgear 54 Mbps Wireless Router and PC Card Kit (WGB511BDL1)

This complete kit sets you free to take your notebook computer anywhere without being tied to ethernet cables. Enjoy broadband internet connection sharing and access to network resources at up to 54 Mbps. Double firewall provides superior protection from hackers. High-level encryption ensures confidentiality and prevents unauthorised access to your network.



Our Price \$97 Save \$22

WebCode.....NTG7071

Netgear WALL-PLUGGED ETHERNET SWITCH (XE104)

The XE104 85 Mbps Wall-Plugged Ethernet Switch delivers everything you need to extend the Internet to any room in your home without having to run new wires. plug one XE104 into your router and another XE104 (up to 4) to any Ethernet-ready devices including a PC, a gaming console, Netgear's SC101 Storage Central, a Slingbox, a DVR or Netgear's PS121 USB Print Server.



Our Price \$134 Save \$35

WebCode.....NTG7655

Netgear ProSafe VPN Firewall 8 with 4 Port 10/100 Mbps Switch (FVS114)

Compact FVS114 ProSafe VPN Firewall 8 offers strong encryption, 8 IPSec VPN connections, SPI firewall, intrusion detection, URL filtering, and more. SNMP, Smart Wizard, VPN Wizard simplify set up and use. Compatible with leading VPN devices, including Cisco, Juniper/Netscreen, Checkpoint; works with all major operating systems. Optimised for ProSafe VPN client software and NMS100.



Our Price \$136 Save \$33

WebCode.....NTG7353

Netgear ProSafe 24 Port 10/100 Smart Switch

NETGEAR's ProSafe Smart Switch affordably delivers built-in gigabit power and fiber flexibility at an attractive price. With 24 10/100 ports, two Gigabit Ethernet ports, and an SFP slot, growing business networks can keep up with expanding network needs. In addition, a Web-browser interface offers simple switch management, making it easy to configure ports, trunks, VLANs, and prioritisation



Our Price \$398 Save \$101

WebCode.....NTG7304

Networking

RENT SMART
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See page 2 for details!

TRENDnet Adv. Day/Night Internet Camera Server with Audio (TV-IP301)

The Advanced Day/Night Internet Camera Server with Audio is perfect for transmitting real-time video over the Internet. This camera provides high quality streaming video with frame rates up to 30fps. Users can view up to 16 cameras on one screen at any time.



Our Price **\$843** Save **\$116**
WebCode.....TDN0181

TRENDnet Adv. Pan/Tilt Internet Camera Server (TV-IP400)

This full-featured surveillance camera provides high quality video over a wired network connection. Built-in CPU and Web Server allow users to access the camera anywhere in the world using a Web browser.

Wireless Advanced Pan & Tilt Internet Camera Server (TDN0184) **\$519**



Our Price **\$382** Save **\$57**
WebCode.....TDN0183

TRENDnet 2-Port PS/2 Audio KVM Switch (include 2 x KVM cables) (TK-208K)

The TRENDnet 2-Port PS/2 Audio KVM Switch allows you to share your monitor, keyboard and mouse as well as microphone and speakers. With its Hot-Plug, Auto-Scan and Hot-Key features, the TK-208K is the perfect choice for managing 2 PCs.

4-port PS2 KVM Switch Kit w/Audio (include 4 x KVM Cables) (TK-408K) (TDN0148) **\$105**



Our Price **\$63** Save **\$16**
WebCode.....TDN0139

TRENDNet 54Mbps 802.11g ADSL Firewall Modem Router (TEW-435BRM)

TRENDnet's TEW-435BRM delivers the most complete high-performance network solution. It includes a Wireless 802.11g 54Mbps Access Point, ADSL Modem, Firewall, Internet Router, and 4-Port Switch. The TEW-435BRM offers all-in-one Internet and network access. Advanced security includes Stateful Packet Inspection (SPI) Firewall and Application Level Gateway (ALG) for secured online communications.



Our Price **\$156** Save **\$36**
WebCode.....TDN0234

TRENDnet 108Mbps 802.11g MIMO Wireless Router (TEW-611BRP)

Using the latest technology, the MIMO 802.11g Wireless Router offers a robust wireless solution to extend wireless coverage and improve network performance. It's also back-ward compatible with 802.11g and 802.11b, so legacy wireless devices can benefit from MIMO's extended range.

For bandwidth intensive applications, the MIMO wireless router offers intelligent stream handling and automatic traffic prioritization.



Our Price **\$218** Save **\$51**
WebCode.....TDN0155

TRENDNet 300Mbps Wireless N-Draft Firewall Router (TEW-631BRP)

The 300Mbps* Wireless N Draft Router incorporates the latest wireless networking technology to increase speed, range and reliability of your wireless network. Advanced antenna technology increases wireless data coverage throughout homes and businesses. Increased speed and throughput makes it the perfect solution to fulfill your multimedia needs.



Our Price **\$282** Save **\$67**
WebCode.....TDN0166

TRENDNet 5-port 10/100Mbps Auto-MDIX Fast Ethernet Mini Switch (TE100-S55Eplus)

TRENDnet's TE100-S55Eplus, 5-port, palm-sized 10/100Mbps Fast Ethernet Switch, presents the perfect choice for small workgroups for any desktop space. It allows users to simply plug any port to either a 10Mbps or 100Mbps network to multiply bandwidth, boost response time and satisfy heavy load demands.



Our Price **\$38** Save **\$10**
WebCode.....TDN0218

TRENDNet 54Mbps 802.11g Wireless Firewall Router (TEW-432BRP)

The 54Mbps Wireless G Router offers a complete wireless solution that allows you to share files, an Internet connection, or network resource while protecting your network using enhanced security features. Simply plug your workstations and your broadband modem into the Wireless G router, and configure your broadband connection using its built-in Web Interface.



Our Price **\$116** Save **\$13**
WebCode.....TDN0162

TRENDnet 108Mbps MIMO Wireless Router & PCMCIA Card Bundle

Using the latest technology, the MIMO 802.11g Wireless Router offers a robust wireless solution to extend wireless coverage and improve network performance.

- Wi-Fi Compliant with IEEE 802.11g and IEEE 802.11b Standards
- Supports Ad-Hoc (Peer-to-Peer) Mode or Infrastructure (AP-Client) Mode
- Supports Super Technology with Data Rate up to 108Mbps (8X Faster)



Our Price **\$198** Save **\$225**
WebCode.....TDN0232

TRENDNet 300Mbps Wireless N-Draft PC Card (TEW-621PC)

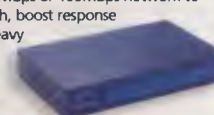
The 300Mbps* Wireless N-Draft PC Card allows you to connect wirelessly with supercharged speed, range and reliability. Wireless speeds increase up to 300Mbps when connecting to TRENDnet Wireless N-Draft access points or wireless routers. This 802.11n device seamlessly connects to your wireless network without performance degradation.



Our Price **\$179** Save **\$50**
WebCode.....TDN0106

TRENDNet 8-port 10/100Mbps Auto-MDIX Fast Ethernet Mini Switch (TE100-S88Eplus)

TRENDnet's TE100-S88Eplus, 8-port, palm-sized 10/100Mbps Fast Ethernet Switch, presents the perfect choice for small workgroups for any desktop space. It allows users to simply plug any port to either a 10Mbps or 100Mbps network to multiply bandwidth, boost response time and satisfy heavy load demands.



Our Price **\$54** Save **\$10**
WebCode.....TDN0219

TRENDNet 54Mbps 802.11g Wireless USB 2.0 Adapter (TEW-424UB)

TRENDnet's TEW-424UB 802.11g Wireless USB 2.0 Adapter brings together the convenience of USB 2.0 and the high speed of 802.11g, allowing you to easily connect to 802.11g networks at speeds of up to 54Mbps. The USB 2.0 interface facilitates a hassle-free Plug-and-Play installation, and 128-bit WEP Encryption provides robust network security.

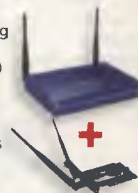


Our Price **\$53** Save **\$6**
WebCode.....TDN0093

TRENDnet 108Mbps MIMO Wireless Router & PCI Card Bundle

Using the latest technology, the MIMO 802.11g Wireless Router offers a robust wireless solution to extend wireless coverage and improve network performance.

- Wi-Fi Compliant with IEEE 802.11g and IEEE 802.11b Standards
- Supports Ad-Hoc (Peer-to-Peer) Mode or Infrastructure (AP-Client) Mode
- Supports Super G Technology with Data Rate up to 108Mbps (8X Faster)



Our Price **\$198** Save **\$245**
WebCode.....TDN0233

TRENDNet 300Mbps Wireless N-Draft PCI Adapter (TEW-623PI)

The 300Mbps* Wireless N-Draft PCI Adapter allows you to connect wirelessly with supercharged speed, range and reliability. Wireless speeds increase up to 300Mbps* when connecting to TRENDnet Wireless N-Draft access points or wireless routers.



Our Price **\$194** Save **\$45**
WebCode.....TDN0107

TRENDnet 26-Port Gigabit Web Smart PoE Switch (TPE-224WS)

This Smart Switch integrates Power over Ethernet and network management features. It reduces equipment cost by delivering data and power over existing network cable infrastructure. The switch offers advanced network management features such as VLAN and QoS to meet secured network applications.



Our Price **\$1068** Save **\$431**
WebCode.....TDN0230

D-Link DECT Cordless VoIP Phone (DPH-C160S)

A phone solution that makes adding a VoIP phone service to a standard phone service quick, easy and inexpensive. Get immediate access to low cost international and interstate VoIP calling and traditional phone service in a single device. With true plug & play simplicity, the DPH-C160S is a normal DECT cordless phone when you connect it to an ordinary phone line connection, and it is an VoIP phone when you connect it to the Internet through a broadband connection.

- Make/Receive VoIP and regular calls on the same phone
- Echo cancellation for enhanced voice quality
- Speed-dial, Call forwarding, Call waiting between VoIP and regular phone line
- 3-Way conference calling between VoIP and regular phone line
- Switch between VoIP and regular phone line
- Auto detection and switching of incoming VoIP and regular calls
- PSTN failover for loss of Internet connection
- Handset locator
- Speaker phone



Our Price **\$226** Save **\$43**
WebCode.....DLK0006

D-Link Wireless Media Player (DSM-320RD)

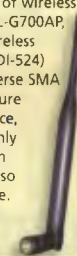
D-Link introduces the latest addition to its multimedia family of products; the D-Link DSM-320RD Wireless Media Player. The DSM-320RD unites your network with your home entertainment centre, allowing you to wirelessly stream Music, Photos & Video to your TV. Enjoy Internet Radio & Downloaded Music from Premium Online Services. Includes Progressive Scan DVD Player, built-in 5-in-1 Memory Card Reader and remote control.



Our Price **\$352** Save **\$47**
WebCode.....DLK0129

D-Link 5dBi Gain Dipole Antenna (DWL-50AT)

The D-Link DWL-50AT is a 5dBi High Gain Antenna with Reverse SMA connector. It can help to improve the transmit rate and extend the transmit distance of wireless access point (DWL-G700AP, DWL-G710) or wireless gateway router (DI-524) which have a reverse SMA connector. To ensure better performance, you should not only improve the RF on transmitter but also on the receiver, i.e. high gain card.



Our Price **\$29** Save **\$6**
WebCode.....DLK0210

D-Link 54Mbps Wireless Router (DI-524)

The DI-524 is a high-speed 2.4GHz 802.11g wireless broadband Router with a built-in 4-port Fast Ethernet Switch. It incorporates high-speed wireless LAN with speeds of up to 54Mbps. This router lets you quickly share DSL or cable modem Internet connection, with or without the network wires

PCMCIA wireless card (DLK9992) **\$39**
PCI wireless card (DLK9991) **\$39**
USB device (DLK1153) **\$48**



Our Price **\$86** Save **\$34**
WebCode.....DLK9994

D-Link 108Mbps Wireless Storage Router (DI-624S)

Wirelessly share a Broadband Internet Connection of up to 108Mbps. Also features 2 USB 2.0 Ports to Connect and Share either a USB External Hard Disk Drive or Printer. 802.11b, 802.11g Compatible.

PCMCIA wireless card (DLK5401) **\$68**
PCI wireless card (DLK5400) **\$70**
USB device (DLK6021) **\$77**



Our Price **\$175** Save **\$24**
WebCode.....DLK9989

D-Link RangeBooster N 650 Router (DIR-635)

A draft 802.11n compliant device that delivers real world performance of up to 650% faster than an 802.11g wireless connection and faster than 100Mbps wired Ethernet. Connect the RangeBooster N 650 Router to a cable or DSL modem and share your high-speed Internet access with everyone on the network.

PCMCIA wireless card (DLK9206) **\$163**
PCI wireless card (DLK9205) **\$163**



Our Price **\$247** Save **\$52**
WebCode.....DLK9208

D-Link VoIP Terminal Adapter (DVG-2001S)

The DVG-2001S VoIP Terminal Adapter links traditional telephony networks to IP networks with conventional telephony devices such as analog phones or fax machines. This product has one RJ-12 port to connect to a standard phone and one Ethernet port to connect to a network.



Our Price **\$80** Save **\$39**
WebCode.....DLK9252

54Mbps Wireless ADSL/ Triple Play Router (DVA-G3340S)

This 54Mbps Wireless ADSL 2/2+ Modem Router also includes 2 analogue RJ-12 ports to easily connect 2 standard phones/fax machines. These standard phones then make phone calls over the internet, drastically reducing call costs. Also includes built-in 4-port Ethernet Switch & QoS (Quality of Service) to guarantee voice quality.



Our Price **\$254** Save **\$45**
WebCode.....DLK8500

D-Link GigaExpress Gigabit Switch (DGS-1005D)

Get the blazing speed of Gigabit Ethernet with the D-Link GigaExpress DGS-1005D, a 5-port 10/100/1000Mbps Gigabit Switch that delivers power, performance, and reliability in one cost-effective, space-saving design.

Ethernet 5 port Switch (DLK0666) **\$77**
Ethernet PCI Card (DLK0103) **\$30**
Gigabit PCI Card (DLK0005) **\$140**

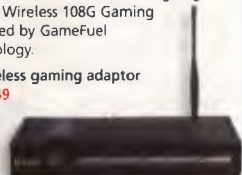


Our Price **\$77** Save **\$23**
WebCode.....DLK0666

D-Link Wireless 108G Gaming Router (DGL-4300)

Push the limits of basic networking technology and experience the evolution in networking. Wirelessly share broadband Internet, boost network performance, stay competitive in your online games with D-Link's cutting-edge GamerLounge Wireless 108G Gaming Router, powered by GameFuel Priority Technology.

DGL-3420 wireless gaming adaptor (DLK9351) **\$149**



Our Price **\$235** Save **\$65**
WebCode.....DLK6007

D-Link USB/Ethernet ADSL Modem (DSL-502T)

Using ADSL technology, your Internet speeds can be up to 150 times faster than a 56K modem over a standard phone line. Two computers can simultaneously connect via the USB and ethernet port to share its high-speed internet connection. You can connect to its ethernet port regardless of the operating system you are using, or connect to its USB port to allow easy installation to a USB equipped computer.



Our Price **\$75** Save **\$45**
WebCode.....DLK9977

D-Link ADSL Modem with 54Mbps Wireless Router (DSL-G604T)

With a built-in ADSL 2/2+ interface, 802.11g high-speed wireless LAN, 4 10/100BASETX Ethernet switch ports and advanced router functions, this device gives your business a convenient and cost-effective way to install a fast secure, bottleneck-free network link to the outside world. The DSL-G604T is an ADSL Modem Router designed for home or office use.



Our Price **\$125** Save **\$55**
WebCode.....DLK5109

High-Speed Wireless Access Point (DWL-G700AP)

With the ability to transfer files with a maximum wireless signal rate of up to 54Mbps*, the DWL-G700AP gives you high-speed wireless network access for your home or office. Supports Infrastructure mode and Compatible with 802.11b/g standards.



Our Price **\$87** Save **\$33**
WebCode.....DLK9993

Networking

Buying the latest IT Hardware? Why not extend your warranty! See page 2 for details!

UP TO 3 Year Warranty

Apple Ipod Shuffle

The world's smallest digital music player and just 113\$, the 1GB iPod shuffle lets you wear up to 240 songs on your sleeve. Or your lapel. Or your belt. Clip on iPod shuffle and wear it as a badge of musical devotion.



Our Price \$113 **Save \$6**
WebCode APP0245

Apple Ipod Nano 4GB Pink

With its new anodized aluminium enclosure and rounded edges, iPod nano looks as dazzling as it feels. And it's sleeker than ever — 3.5 inches tall, 1.6 inches wide, and just over quarter of an inch thin. Play your music even longer between charges — up to a full day. And recharge your iPod to 80% capacity in just 90 minutes. Your album art, photos, and more gain even more brilliance thanks to a 1.5-inch colour display that's 40% brighter than before.

Blue (APP0236) **\$288**
Green (APP0242) **\$288**
Silver (APP0235) **\$288**



Our Price \$288 **Save \$11**
WebCode APP0236

SAP Business One User License

Includes Run Time MS SQL Server Enterprise

SAP Business One is an integrated, affordable business management solution designed specifically for small and midsize businesses. For the first time, business owners have a single system that automates processes and offers an accurate, up-to-the-minute picture of their business.



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- Financials
- CRM
- Sales
- Purchasing
- Inventory Management

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Our Price \$766 **Save \$125**
WebCode SAP1001

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BUSINESS SOLUTIONS

SAP B1 Professional License
Our Price \$2524 **Save \$446**
WebCode SAP1000

CSBS "FAST TRACK" Bundle

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- 4 Named-User Licenses for SAP Business One
 - 2 Professional User Licenses
 - 2 CRM User Licenses
- 1-Year SAP Annual Maintenance
- 1-Day Onsite Installation of software
- Standard preconfigured database for distributors and wholesalers.
- Logo in forms (Sales/purchase orders & invoices)
- Standard out-of-the-box configuration settings
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SAP Fast Track Bundle
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WebCode SAP1006



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Avison 210 & 220 Series Document Scanners

Convert piles of paper into digital files in one pass.

- Scan 25 B&W pages a minute.
- Scan up to 20 colour photos a minute
- Comes with TextBridge OCR, Roxio Photo Suite and Paperport 9SE
- High speed USB 2.0 interface
- Compact and quiet

AV220 (PRS0022) **\$854**
AV220C (PRS0023) **\$1147**

AV210C2
Our Price \$660 **Save \$39**
WebCode PRS0021

ArtixScan DI 1210

50 Sheet ADF, 12ppm legal size and A4 flatbed document scanner. Can also scan colour photos and other office graphics. Bundled with Paperport 9SE Ulead Photo Explorer.

- Hi-Speed USB 2.0 interface
- 48 bit colour input & output
- Manual duplexing

Our Price \$660 **Save \$39**
WebCode PRS0016

ArtixScan DI 2010

A4 flatbed and legal size ADF document scanner, ideal solution for small and medium sized businesses looking to archive documents, scan in reports and convert to editable text (OCR).

- Comes with Fine Reader Sprint OCR, Paperport 9SE, Ulead Photo Exp
- High speed SCSI-2 & USB 2 interface
- 1200 x 600 dpi resolution
- Manual duplexing

Our Price \$919 **Save \$79**
WebCode PRS0018

Microtek ScanMaker i800 Flatbed Scanner

Revive those old photos and digitise those slides.

- Extra large scanning area, fits 4 standard photos in one batch
- Hi-Speed USB 2 and FireWire interfaces
- 4800 dpi optical resolution (9600 x 4800)
- EZ-Lock film holders for slides & filmstrips
- Digital ICE removal of dust and scratches.
- High dynamic range

Our Price \$687 **Save \$111**
WebCode PRS0019

Avison AV3850SU

High speed, reliable and efficient true duplex document scanning, combining a flatbed and a 50 page ADF will scan up to 50ppm. Straight paper path minimises paper jams. A powerful bundle of software includes AVCapture, ScanSoft TextBridge OCR and PaperPort 9, Roxio Photosuite. Both hi-speed USB 2.0 and SCSI ports.

Our Price \$2772 **Save \$226**
WebCode PRS0017

Microtek ScanMaker i900 Flatbed Scanner

A quality scanner for the DTP user. Scan film with glass-free film holders, eliminating optical diffraction & dust problems caused by glass. Better shadow detail, improved clarity and excellent colour accuracy on default scans.

- Includes Kodak IT8 colour calibration targets and a full version of Silverfast 6.
- 6400 x 3200 dpi resolution
- Glass-free film scanning
- FireWire & USB 2.0

Our Price \$1428 **Save \$71**
WebCode PRS0020

See page 2 for details!
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Dicota Universal Travel Adapter

Cosmos Power solves your contact problems all around the world! The patented travel socket adapter has four power plug versions (EU, US, UK, AUS). A safe and easy way to connect your portable devices (Notebook, PDA, mobile phone, etc.) to an electrical outlet in more than 150 countries.



Our Price \$33 Save \$12
WebCode.....DIC0038

Pinnacle Soundbridge Network Media Player

Pinnacle SoundBridge is a stylish wireless and ethernet network music player that directly connects to your stereo or powered speakers and plays digital music files stored on your PC or Mac to anywhere in the house. Listen to thousands of internet radio stations even when the computer is switched off. A large display and remote control lets you browse, select and control your music from across the room. Works with PC or MAC.

Stream Music Wirelessly



Our Price \$363 Save \$36
WebCode.....PIN0151

TVIX M-3100U Harddisk Media Player

TVIX is a standalone, multimedia hard disk player that plays digital videos, digital music, digital still photographs and DVD file to a TV or home entertainment system. This is a new way of enjoying digital content in the comfort of your own living room without having to burn discs and playing it back on a DVD or CD player. TVIX performs just like a DVD player. Better still it doubles as a portable DVD movie library! Create your own home DVD movies and watch them as though they were playing back on a DVD player.



Portable Media Jukebox

Our Price \$294 Save \$26
WebCode.....DVC0020

TVIX HD M-5000U

Playback high definition video (up to 1920x1080i) and still images. Pre-recorded HDTV programs from a digital TV set-top box or personal digital video contents taken by a HDV™ camcorder can be played back with TVIX HD on a high definition display. The TVIX HD features a DVI connector and component, which matches the high resolution of HD level video contents



Our Price \$577 Save \$73
WebCode.....DVC0015

Pinnacle Studio 500 USB

Pinnacle Studio 500-USB version 10 provides the ease and power to quickly combine and enhance your precious memories from digital and analog camcorders and VCR's on your PC or laptop and effortlessly preserve and share them on DVD and beyond.



Offer is via redemption, for details see www.csw.com.au/promotions

Our Price \$275 Save \$44
WebCode.....PIN0117

Kaiser Baas Digital Photo Frames

The perfect complimentary product for digital cameras!

Show all your digital photos as slideshows with background music in these two contemporary design digital photo frames.

- Available in 5.6inch or 8inch LCD screens (viewable area)
- Easy-to-use menu screen with onboard buttons
- 32MB built-in memory
- Adjustable leg length
- Rotate, Zoom, Set Slideshow Duration
- Wall mount hole & tripod screw hole
- Infra-red remote control

5.6" Digital Photo Frame Black (KBA0001) **\$252**
8" Digital Photo Frame Black (KBA0002) **\$376**



5.6" Digital Photo Frame - White
Our Price \$252 Save \$47
WebCode Mac.....KAB0003

8" Digital Photo Frame - white
Our Price \$376 Save \$23
WebCode Mac.....KAB0004

Pinnacle Studio 700 USB

the most friendly, complete and powerful home video editing solution available today. Studio Plus 700-USB provides the ease and power to quickly combine, enhance, and instantly preview on TV, your videos from digital and analog camcorders and effortlessly preserve and share them on DVD, the Web and beyond.



Offer is via redemption, for details see www.csw.com.au/promotions

Our Price \$429 Save \$60
WebCode.....PIN0119

Dvico Fusion HDTV DVB-T NANO

- Decoding and viewing of Digital Terrestrial TV
- USB 2.0 high speed compatible
- Real Time Digital Video Recording(DVR) & Scheduled recording
- Recording stream cut-on-the-fly util
- High resolution still image capture
- HD(MPEG2) to DVD/ MPEG4 (Divx) conversion
- USB remote control included
- Time-shifting



Our Price \$148 Save \$51
WebCode.....DVC0019

Dvico FusionHDTV Dual Digital 2

- Watch One Channel While Recording Another
- Watch DVB-T Digital TV Programs on Your PC
- Picture in Picture (PIP) & Multi-view Function
- Record TV programs to hard drive as DVD/ MPEG2 format
- Scheduled recording from Hibernation/Stand-by/PC-off mode
- Pause and replay live TV shows (Time-shifting function)
- Analog video capture and recording in digital
- High-resolution still image capture



Our Price \$242 Save \$33
WebCode.....DVC0022

Gecko Trance headphones for iPod

Gecko Trance in-ear headphones for iPod. Ultra cool headphones. Deep bass and crisp treble bring out the very best in your tunes! Chill out or groove-it-up with gecko trance headphones. Includes two different colour sets of ear phone pads. Mix-it-up.



Our Price \$19 Save \$11
WebCode.....PVR0080

Gecko Duo Charge

Gecko duo-charge. The iPod power adaptor with so much more! Charges up to two iPods at the same time, suits all iPods including iPod shuffle. Gecko's unique pin system delivers power for USA, Australia and NZ from a single twist of the pins. BONUS USB - iPod connection cable included.



* iPod Not Included*
Our Price \$37 Save \$2
WebCode.....PVR0184

Gecko in Car Duo Charge

iPod in-car Duo charge allows you to charge your iPod in your car, boat, caravan or anywhere else you have a 12v power outlet. Includes a special USB to 30pin dock connector and mini USB connector cable allowing you to charge iPod shuffle, other MP3 players and mobile phones. Includes a replaceable fuse to protect iPod from excessive power loads.



Our Price \$23 Save \$19
WebCode.....PVR0066

Multimedia & Accessories

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See page 2 for details!

Consumables

HP Laserjet 3050

HP LaserJet Q2612A Black Print Cartridge - 2,000 Sheets (HPL2612) **\$101**

HP 3 Year Return To Depot Warranty (HPW6987) **\$141**

HP Laserjet 3052

HP LaserJet Q2612A Black Print Cartridge - 2,000 Sheets (HPL2612) **\$101**

HP 3 Year Return To Depot Warranty (HPW6987) **\$141**

HP Laserjet 3055

HP LaserJet Q2612A Black Print Cartridge - 2,000 Sheets (HPL2612) **\$101**

HP 3 Year Return To Depot Warranty (HPW6987) **\$141**

HP Laserjet 3390

HP LaserJet Q5949A Black Print Cartridge - 2,500 Sheets (HPL5949) **\$103**

HP LaserJet Q5949X Black Print Cartridge - 6,000 Sheets (HPL5994) **\$188**

HP 3 Year Onsite Warranty (HPW2659) **\$192**

HP Laserjet 1020

HP LaserJet Q2612A Black Print Cartridge - 2,000 Sheets (HPL2612) **\$101**

HP 3 Year Onsite Exchange Warranty (HPW5510) **\$79**

HP Laserjet 1022

HP LaserJet Q2612A Black Print Cartridge - 2,000 Sheets (HPL2612) **\$101**

HP 3 Year Onsite Exchange Warranty (HPW5510) **\$79**

HP Laserjet 1320

HP LaserJet Q5949A Black Print Cartridge - 2,500 Sheets (HPL5949) **\$103**

HP LaserJet Q5949X Black Print Cartridge - 6,000 Sheets (HPL5994) **\$188**

HP Next Business Day Onsite 3 Year Warranty (HPW5473) **\$53**

HP Laserjet 2420

HP LaserJet Q6511A Black Print Cartridge - 6,000 Sheets (HPL5949) **\$103**

HP LaserJet Q6511X Black Print Cartridge - 12,000 Sheets (HPL5994) **\$188**

HP Next Business Day Onsite 3 Year Warranty (HPW3791) **\$158**

HP Laserjet 2600

HP LaserJet Q6511A Black Print Cartridge - 6,000 Sheets (HPL5949) **\$103**

HP LaserJet Q6511X Black Print Cartridge - 12,000 Sheets (HPL5994) **\$188**

HP Next Business Day Onsite 3 Year Warranty (HPW0114) **\$177**

HP Laserjet 2840

HP Color LaserJet Q6000A Black Print Cartridge (HPL6060) **\$109**

HP Color LaserJet Q6001A Cyan Print Cartridge (HPL6061) **\$119**

HP Color LaserJet Q6002A Yellow Print Cartridge (HPL6062) **\$119**

HP Color LaserJet Q6003A Magenta Print Cartridge (HPL6063) **\$119**

HP LaserJet 3055 A4 Mono All-in-one Printer

Benefit from full functionality with the compact, flatbed HP LaserJet 3055 All-in-One. Versatile and reliable, it lets you produce professional documents quickly with fast print, fax, scan and copy functions, plus network connectivity.

- Print: 18ppm, first page out less than 8 sec, 1200 x 1200 dpi 264MHz, 64MB RAM
- Copy: Flatbed 600 x 600 dpi, 24 bit depth
- Scan: 600 x 600 dpi optical resolution (9600 dpi enhanced) colour scanning
- Fax: 33.6 kbps



Our Price **\$667** Save **\$154**
WebCode HPL6530

HP LaserJet 3050 A4 Mono all-in-one printer

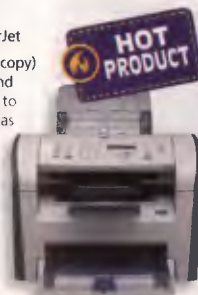
With HP's known reliability and quality, the LaserJet 3050 brings 4 in 1 functionality (fax, print, scan, copy) to provide a space saving solution for business and home users. The LaserJet 3050 All-in-One is a joy to use with an easy to follow control panel which has a simple, 2-line, 16-character backlit display that requires no training. HP's expert knowledge will help you make the most of your All-in-One and ensure your equipment is running at peak efficiency.

Print: 18ppm, First page out less than 8 sec, 1200 x 1200 dpi 264MHz, 64MB RAM

Copy: 600 x 600 dpi, 24 bit depth

Scan: 600 x 600 dpi (up to 19,200 dpi enhanced)

Fax: V.34 fax modem - 33.6 kbps



Our Price **\$445** Save **\$54**
WebCode HPL6504

HP LaserJet 1320 A4 Mono Printer

Produce professional, black-and-white documents quickly with HP LaserJet 1320 printers. Ideal for individuals and small work teams, this series also offers flexible networking options and automatic two-sided printing.

- Up to 22 ppm, letter (up to 21 ppm, A4)
- 1200 dpi resolution
- 133 MHz Motorola V4 Coldfire processor
- 16 MB RAM, expandable to 144 MB with one open, industry-standard, 100-pin DIMM slot
- 10,000 pages per month

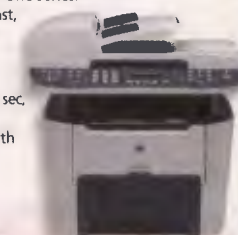


Our Price **\$531** Save **\$110**
WebCode HPL5927

HP LaserJet 3390 A4 Mono All-In-one Printer

Improve productivity for essential office tasks with the high-performance HP LaserJet 3390 All-in-One series. This networked, flatbed device delivers fast, professional quality black-and-white printing, faxing, colour scanning and digital copying

- Print: 21ppm, first page out less than 10 sec, 1200 x 1200 dpi 264MHz, 64MB RAM
- Copy: Flatbed 600 x 600 dpi, 24 bit depth
- Scan: Flatbed 1200 x 1200 dpi (up to 19,200 dpi enhanced)
- Fax: V.34 fax modem - 33.6 kbps



Our Price **\$981** Save **\$109**
WebCode HPL6500

HP LaserJet 3052 A4 Mono All-in-one Printer

- Print: 18ppm, first page out less than 8 sec, 1200 x 1200 dpi 264MHz, 64MB RAM
- Copy: Flatbed 600 x 600 dpi, 24 bit depth
- Scan: 600 x 600 dpi optical resolution (9600 dpi enhanced) colour scanning



Our Price **\$536** Save **\$63**
WebCode HPL6520

HP LaserJet 1020 A4 Mono Printer

- Up to 15 ppm (letter), 14 ppm (A4)
- Less than 10 seconds with Instant-on Technology
- 1200 dpi effective output quality
- 234 MHz Processor
- Memory 2 MB RAM
- 5,000 pages per month duty cycle



Simple. Compact. Affordable.
Our Price **\$197** Save **\$46**
WebCode HPL5911

HP LaserJet 1022 A4 Mono Printer

- Up to 19 ppm letter (up to 18 ppm A4)
- Less than 8 seconds with Instant-on Technology
- 8,000 pages per month duty cycle
- Processor 266 MHz
- Memory 8 MB RAM
- True 1200 dpi



Professional Laser results.
Our Price **\$281** Save **\$56**
WebCode HPL5912

HP LaserJet 2420 A4 Mono Printer

- Print speed of up to 30 ppm (letter), 28 ppm (A4)
- 32 MB RAM, expandable to 288 MB
- 100-sheet multipurpose tray
- 250-sheet input tray



Reliable. Easy-to-use
Our Price **\$1046** Save **\$218**
WebCode HPL5956

HP LaserJet 2600n A4 Colour Printer

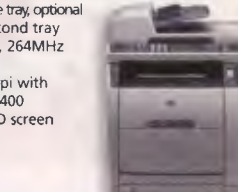
- 8 ppm A4 black & colour
- 600 x 600 dpi
- 35,000 pages per month duty cycle
- 1 USB 2.0 port
- 1 built in Fast Ethernet wired networking port
- 16MB Memory



Our Price **\$562** Save **\$235**
WebCode HPL6455

HP LaserJet 2840 AiO A4 Colour Printer

- Your 3-in-1 business centre for professional colour laser print, copy and scan (network-ready)
- 19ppm mono and 4ppm colour
- 50 sheet Automatic Document Feeder, 125 sheet multi purpose tray, optional 250 sheet second tray
- 96MB RAM, 264MHz processor
- 600 x 600 dpi with ImageREt 2400
- Friendly LED screen



Our Price **\$1541** Save **\$327**
WebCode HPL3905

Fuji Xerox Phaser 8500DN

A4 Colour Solid Ink Printer

- Up to 85,000 pages maximum monthly duty cycle
- Print speed of 24 ppm
- First page out in 6 seconds
- Resolution 600 x 600 dpi
- Memory up to 256MB
- Adobe PostScript 3 and PCL5c
- Duplex printing

HUGE 28% off

Environmentally Friendly & Easy to use!

Our Price **\$1567** Save **\$628**
WebCode.....FXP8510

Fuji Xerox DocuPrint C2535A

A4 Colour Laser Printer

- Black print speed 35ppm
- Colour print speed 25ppm
- Memory size 128MB upgradeable to 640MB
- Max duty cycle up to 90,000ppm
- Resolution 1200 x 1200 dpi
- Paper capacity 700 sheets standard, 2350 max
- Very low cost per print



Duplex & network ready with uncompromised reliability & performance

Our Price **\$1511** Save **\$244**
WebCode.....FXP2535

Fuji Xerox DocuPrint C525 A

A4 Colour Laser Printer

- Black Print Speed 25ppm
- Colour Print Speed 5ppm
- First Page Out 9 Sec
- Black 17 Sec Colour
- Memory Size 64MB
- Max Duty Cycle 45,000 ppm
- Resolution 9600 x 600 image enhancement
- Paper capacity 250 sheets Std / 950 Max



Our Price **\$513** Save **\$76**
WebCode.....FXP0525

Fuji Xerox WorkCentre PE220

Black & White Multifunction Printer

The WorkCentre PE220 is big in performance and small in size making it suitable for small businesses and workgroups, branch offices and individual users. Clean, efficient laser printing Razor sharp copying Great colour and monochrome scanning

NEW



Print/Copy Fax/Scan

Our Price **\$367** Save **\$132**
WebCode.....FXP1220

Konica Minolta Magicolor 2490MF

A4 Colour Multi-function

Konica Minolta is perfect for professionals working at home or in small offices, space is not a luxury. However, this does not limit the need for productivity and flexibility. The magicolor 2490MF printer copier meets all of your requirements. This quality colour laser printer copier provides you with a total office solution in a single device.

- Print speed up to 20 ppm A4 mono and 5 ppm colour
- Copy speed up to 12 ppm A4 mono and 5 cpm colour (1 to 1)
- Resolution up to 2400 x 600 dpi (print), 600 dpi (copy and scan)
- Stand alone Fax functionality
- Solid 50 sheets ADF unit
- 128 MB RAM
- 1 year on-site warranty



Our Price **\$1398** Save **\$151**
WebCode.....QMS2492

Konica Minolta Magicolor 2500W

A4 Personal Colour

The Konica Minolta Personal colour laser. This small, fast and cost effective printer is a welcome addition to any team. It is designed to be easier to use, and to run with less consumables. The polymerised toner creates outstanding print quality, and the revolutionary design also reduces waste.

- Print speed up to 20 ppm mono (A4/letter), 5 ppm colour (A4/letter)
- Resolution up to 2400 x 600 dpi
- 32MB RAM Standard Memory (max)
- 200-sheet multipurpose paper tray
- USB 2.0 Hi Speed
- 2 year on-site warranty (Next day service)
- Microsoft Windows



Our Price **\$456** Save **\$43**
WebCode.....QMS2500

Konica Minolta Magicolor 2530DL

A4 Workgroup Colour

Konica Minolta connects your digital camera directly to this printer. Imagine a compact colour laser printer that everyone can share! Whole workgroups can benefit from cost effective colour printing with the NEW magicolor 2530 DeskLaser. It is easy to use and integrates direct photo print for fast and easy printout of photos from your PictBridge enabled digital camera.

- Print speed up to 20 ppm mono (A4/letter), 5 ppm colour (A4/letter)
- Resolution up to 2400 x 600 dpi
- 64MB RAM Standard Memory (max. 576MB)
- 200-sheet multipurpose paper tray
- USB 2.0 Hi Speed, Ethernet (10/100BaseTX), PictBridge
- 2 year on-site warranty (Next day service)
- Microsoft Windows, Mac OS, Linux



Our Price **\$593** Save **\$56**
WebCode.....QMS2530

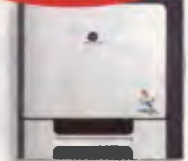
Konica Minolta Magicolor 5430DL

A4 Mid-Range Network Colour

Konica Minolta is a professional solution ideal for creatively communicating in colour! Konica Minolta's pioneer Polymerised toner combined with the high precision 2400dpi resolution allows you to produce business reports, charts, booklets, spreadsheets, flyers and stationery in stunning colour.

- Print speed up to 21 ppm colour/mono (letter), 20 ppm colour/mono (A4)
- Resolution up to 2400 x 600 dpi
- 64MB RAM Standard Memory (max. 576MB)
- PageScope Raster language
- 250-sheet universal cassette
- USB 2.0 Hi Speed, Ethernet (10/100BaseTX)
- 1 year on-site warranty (Next day service)
- Microsoft Windows, Mac OS, Linux

Bonus Free Duplexer, Lower Feeder unit or \$200 Cashback*



Our Price **\$1087** Save **\$212**
WebCode.....QMS5430

Consumables

Fuji Xerox C525A

- Fuji Xerox Toner Cartridge for C525A Cyan (FXP0534) **\$190**
- Fuji Xerox Toner Cartridge for C525A Magenta (FXP0533) **\$190**
- Fuji Xerox Toner Cartridge for C525A Yellow (FXP0532) **\$190**
- Fuji Xerox Toner Cartridge for C525A Black (FXP0535) **\$109**

Fuji Xerox Phaser 8500DN

- Fuji Xerox Ink Cyan 3 Pack (FXP8551) **\$136**
- Fuji Xerox Ink Magenta 3 Pack (FXP8552) **\$136**
- Fuji Xerox Ink Yellow 3 Pack (FXP8553) **\$136**
- Fuji Xerox Ink Black 3 Pack (FXP8554) **\$136**
- Fuji Xerox 8500 2 Year Extended Warranty (FXP8516) **\$510**

Fuji Xerox Docuprint 203A & 204A

- Fuji Xerox Mono Toner 2.5k Page Yield (FXP2416) **\$69**
- Fuji Xerox Drum 12k Page Yield (FXP2417) **\$98**

Fuji Xerox Docuprint C2535A

- Fuji Xerox DocuPrint Yellow Cartridge (FXP2539) **\$335**
- Fuji Xerox DocuPrint Magenta Cartridge (FXP2540) **\$335**
- Fuji Xerox DocuPrint Cyan Cartridge (FXP2547) **\$335**
- Fuji Xerox DocuPrint Black Cartridge (FXP2542) **\$104**
- Fuji Xerox Total 3 Year Onsite Service (FXP2545) **\$500**

Konica Minolta Magicolor 2490MF, 2500W and 2530DL

- Konica Minolta 2400 / 2500 Black Toner (QMS2404) **\$130**
- Konica Minolta 2400 / 2500 Cyan Toner - Std Cap (QMS2403) **\$90**
- Konica Minolta 2400 / 2500 Magenta Toner - Std Cap (QMS2402) **\$90**
- Konica Minolta 2400 / 2500 Yellow Toner - Std Cap (QMS2401) **\$90**
- Konica Minolta 2400 / 2500 Cyan Toner - High Cap (QMS2407) **\$196**
- Konica Minolta 2400 / 2500 Magenta Toner - High Cap (QMS2406) **\$196**
- Konica Minolta 2400 / 2500 Yellow Toner - High Cap (QMS2405) **\$196**

Konica Minolta Magicolor 5430DL

- Konica Minolta Toner Cartridge for MC5430 Black (QMS5433) **\$166**
- Konica Minolta Toner Cartridge for MC5430 Yellow (QMS5434) **\$237**
- Konica Minolta Toner Cartridge for MC5430 Magenta (QMS5435) **\$237**
- Konica Minolta Toner Cartridge for MC5430 Cyan (QMS5436) **\$237**
- Konica Minolta Waste Toner Bottle for MC5430DL (QMS5437) **\$53**
- Konica Minolta 2 Year Onsite Warranty (QMS5439) **\$761**

Business Printers & Consumables

RENT SMART
BECAUSE BUYING ISN'T

See page 2 for details!

Consumables

Epson CX3900/5900
Epson Ink Cartridge Black (EPA7320) \$15

Epson Ink Cartridge Cyan (EPA7330) \$15

Epson Ink Cartridge Magenta (EPA740) \$15

Epson Ink Cartridge Yellow (EPA7350) \$15

Epson RX530

Epson Ink Cartridge Black (EPA5190) \$15

Epson Ink Cartridge Cyan (EPA5290) \$15

Epson Ink Cartridge Magenta (EPA5390) \$15

Epson Ink Cartridge Yellow (EPA5490) \$15

Epson RX650

Epson Ink Cartridge Black (EPA0890) \$17

Epson Ink Cartridge Cyan (EPA0511) \$17

Epson Ink Cartridge Magenta (EPA0512) \$17

Epson Ink Cartridge Yellow (EPA0513) \$17

Epson Ink Cartridge Light Cyan (EPA0514) \$17

Epson Ink Cartridge Light Magenta (EPA0515) \$17

Canon Pixma IP1700 & MP180

Canon Ink Cartridge Colour - CL-41 (CAN0426) \$34

Canon Ink Cartridge Colour - CL-51 (CAN0427) \$48

Canon Ink Cartridge Black - PG-40 (CAN0435) \$32

Canon Ink Cartridge Black - PG-50 (CAN0436) \$42

Canon Pixma MP830

Canon Ink Cartridge Photo Blk - CLI-8BK (CAN0429) \$23

Canon Ink Cartridge Cyan - CLI-8C (CAN0430) \$23

Canon Ink Cartridge Magenta - CLI-8M (CAN0431) \$23

Canon Ink Cartridge Yellow - CLI-8Y (CAN0434) \$23

Canon Pixma MF5730

Canon Mono Toner Cartridge (CAN0502) \$113

Canon Pixma MP600 & IP4300

Canon Ink Cartridge Photo Blk - CLI-8BK (CAN0429) \$23

Canon Ink Cartridge Cyan - CLI-8C (CAN0430) \$23

Canon Ink Cartridge Magenta - CLI-8M (CAN0431) \$23

Canon Ink Cartridge Yellow - CLI-8Y (CAN0434) \$111

Canon Ink Cartridge Black - PGI-5BK (CAN0437) \$23

For entire consumables range see
www.csw.com.au

EPSON STYLUS CX3900

A4 Multifunction

The Epson Stylus CX3900 is the multifunction printer combining versatile features for both the home and the home office. Featuring DURABrite Ultra pigment inks in economical individual ink cartridges, the Stylus CX3900 is a complete printing, scanning and copying solution for the whole family. DURABrite Ultra Ink

- Economical Individual Ink Cartridges
- Print, Scan, and Copy at home
- Epson PhotoEnhance
- Epson Creativity Suite
- Print speeds up to 23ppm
- Print resolution up to 5760 Optimised dpi
- BorderFree prints up to A4
- High speed CCD Scanner
- USB Interface



Our Price **\$112** Save **\$20**
WebCode.....EPI3900

Epson Stylus CX5900

A4 Multifunction

The ideal All-In-One solution for the home, home office and small business. It provides high quality standalone printing from memory card or direct from a Pictbridge capable digital camera.

- DURABrite Ultra Ink
- Economical Individual Ink Cartridges
- Support for most popular memory cards
- Colour LCD screen
- Print, Scan, and Copy at home
- Epson PhotoEnhance
- Print speeds up to 27ppm
- Print resolution up to 5760 Optimised dpi
- BorderFree prints up to A4
- High speed CCD Scanner



Our Price **\$177** Save **\$32**
WebCode.....EPI5900

Epson Photo RX530

A4 Multifunction

Delivering an all-in-one photographic printing, scanning and colour photocopying station.

- Built-in 1.5-inch image viewer
- True BorderFree™ Edge-to-Edge photo printing
- Extensive standalone photograph printing
- High resolution 2400 x 2400 film scanning
- 5760 x 1440 Optimised dpi
- Standalone col and B/W photocopy functionality



Valid till Saturday, 14th October 2006 to Sunday, 14th January 2007

Our Price **\$223** Save **\$41**
WebCode.....EPI0530

Epson Photo RX650

A4 Multifunction

- Built-in 2.5-inch Photo Fine technology colour LCD photo viewer
- High resolution 3200 x 6400 Matrix CCD scanner with built-in transparency unit
- Six individual Intelligent ink cartridges
- Advanced Micro Piezo print head with 90 nozzles per colour for enhanced speed
- Direct copy and print CD/DVD
- Extensive standalone photograph printing features and options



Valid till Saturday, 14th October 2006 to Sunday, 14th January 2007

Our Price **\$417** Save **\$105**
WebCode.....EPI0650

Canon Pixma IP1700

A4 Inkjet Printer

Fast: Prints a photo lab quality 10x15cm borderless photo in approx. 55 seconds*

- Photo lab quality: max. 4800x1200dpi*
- ChromaLife100 system for long-lasting, beautiful photos
- Rapid borderless printing up to A4 size
- Easy-to-use software included



Our Price **\$62** Save **\$7**
WebCode.....CAN0540

Canon Pixma MP180

A4 Multifunction

- 2 picolitre FINE print-head technology results in sharper text and enhanced image detail
- ChromaLife 100 ink for, long-lasting photos
- Produce high-quality photos and documents at up to 4800 x 1200 dpi
- Features "Dual Gamut Colour Processing Technology" for optimised reprints
- Create true borderless 6" x 4", 5" x 7" and A4 size photos



Our Price **\$108** Save **\$11**
WebCode.....CAN0520

Canon Pixma MP600

A4 Multifunction

- Exceptional resolution: 3,584 precision nozzles create exceptional resolution—up to 9600 x 2400 color dpi4. More nozzles = high quality.
- Exceptional detail: Microscopic 1-picolitre sized ink droplets produce detailed photos.
- Sharper previews: The 2.5" high-definition TFT display delivers sharp previews of your images, viewable from up to a 170-degree angle.



Our Price **\$307** Save **\$42**
WebCode.....CAN0530

Canon Pixma IP4300

A4 Inkjet Printer

- 1 picolitre FINE (Full-photolithography Inkjet Nozzle Engineering) print-head technology
- ChromaLife 100 ink for beautiful, long-lasting photos
- Up to 9600 x 2400 dpi printing resolution
- Prints true borderless photos up to A4 size
- Direct digital camera printing



Our Price **\$177** Save **\$22**
WebCode.....CAN0531

Canon Pixma MP830

A4 Multifunction

- Full colour printer, copier, scanner & fax
- 1 picolitre FINE print-head technology, providing up to 9600 x 2400dpi printing
- Dual paper path, auto duplex, mobile phone and digital camera & direct CD/DVD printing
- 5 individual ink tanks for greater economy
- Auto duplex scanning



Our Price **\$476** Save **\$73**
WebCode.....CAN0497

Canon Pixma MF5730

A4 Multifunction

- High resolution laser printer, scanner, and digital copier all-in-one
- Laser copy quality (20cpm, 600 x 600dpi)
- Electronic collating and 2-on-1 copy to fit two originals on one page
- 50-page document feeder
- Optional network printing
- 64MB SDRAM
- CCD scanning



Our Price **\$396** Save **\$53**
WebCode.....CAN0444

See page 2 for details!

smart BUY club 30% rebate

Did you know that you can get up to 30% rebate on every order? www.csw.com.au/smartbuy

HP Photosmart C3180 All in One Printer

Enjoy exciting photo printing plus all-in-one capability with HP Photosmart C3180. Printing a photo takes just a few simple steps with the integrated 2.4-inch image display, or via your PC.

- 4800 dpi colour / 1200 dpi black
- 20ppm Colour 22ppm Black
- Direct photo printing via memory card

BONUS
six month magazine subscription
Valued up to \$51



Our Price \$118 **Save \$11**
WebCode.....HPS3180

HP Photosmart D7360 Photo Printer

Innovative touch screen display and large 3.4-inch size make it easy to view, edit and print photos without a PC. Unrivalled photo and document performance with economical, 6 individual ink cartridges, photo speeds as fast as 12 seconds and documents up to 32 ppm black and 31 ppm colour. Lab-quality photos and laser-quality black text with HP Vivera Inks.



Our Price \$318 **Save \$31**
WebCode.....HPS7058

HP Officejet 5610 All in One Printer

- 4800 dpi Colour 13ppm / 1200 dpi Black 20ppm Printing
- 100 Sheet Tray & 25 Page ADF
- 1200 x 2400 dpi Scan Resolution
- 100 Page Fax Memory
- 100 speed dials
- 13 Colour / 20 Black Copies Per Minute
- 1500 Page Duty Cycle Per Month
- USB Connectivity



Our Price \$228 **Save \$21**
WebCode.....HPS5610

HP Officejet 6310 All in One Printer

- 4800 dpi Colour 24ppm / 1200 dpi Black 30ppm Printing
- 100 Sheet Bin & 35 Page ADF
- 2400 x 4800 dpi Scan Resolution
- 100 Page Fax Memory
- 100 Fax Speed Dials
- 24 Colour / 30 Black Copies Per Min
- 1500 Page Duty Cycle Per Month
- USB, Ethernet & PictBridge Connectivity



BONUS
Free D-Link Bluetooth Adapter
Valued at \$69.95

Our Price \$367 **Save \$32**
WebCode.....HPS8060

HP Photosmart C5180 All in One Printer

Experience class leading photo printing and versatile all-in-one capabilities with the HP Photosmart C5180. Viewing and printing photos without a PC is made simple with the 2.4-inch image display.

- 4 x 6-inch photo in 12 seconds
- Share images over an Ethernet network PC-free photo printing



BONUS
Free Paper
Valued at \$39

Our Price \$324 **Save \$25**
WebCode.....HPS5181

HP Photosmart C6180 All in One Printer

This leading edge HP Photosmart C6180 All-in-One offer performance, versatility and more. Taking only 12 seconds to print a beautiful 4 x 6-inch photo, it's one of the fastest photo all-in-ones. With the large image display.

- Built-in 2.4-inch image display
- PC-free photo printing Efficient printing with HP Vivera Inks



BONUS
Free D-Link Bluetooth Adapter
Valued at \$99

Our Price \$466 **Save \$33**
WebCode.....HPS6181

Lexmark X342n A4

Network-ready, with optional input capacity of up to 800 sheets, the X342n is a reliable team player for your small-workgroup environment. Advanced workflow functions include high-speed faxing, colour scanning in multiple formats, and fast laser printing at up to 25 ppm. Besides its exceptionally low acquisition price, it also offers high-yield 6K cartridges to help drive down your total cost of printing.



Our Price \$545 **Save \$104**
WebCode.....LEX0142

Lexmark X8350 Printer A4 Office All-in-One Plus Photo

Print, Copy, Scan, Fax, reduce and enlarge photos and documents. Share your scanned documents or photos by email or easily print them. A 2.36" (60mm) color screen and 4" x 6" photo scan guides make placement and previewing of photos easy. The Countdown timer tracks printing progress. The exclusive Lexmark Photo Editor Software enhances photos.

- 25 ppm black & 19 ppm colour
- 5,000 pages per month duty cycle
- Scan up to 19200 x 19200 dpi
- 4800 x 1200 dpi
- Copy Up to 50 pages
- 75 gsm bond
- 1 USB port & 1 PictBridge



Our Price \$291 **Save \$58**
WebCode.....LEX8350

Lexmark T430dn A4 Ideal for Small Workgroups

No more waiting for print jobs. The fast processor delivers jobs quickly at 30 ppm A4 and only 8 seconds to your first print. Easy to use. No mess and less frequent cartridge installations.



Our Price \$947 **Save \$888**
WebCode.....LEX1432

Lexmark C522n Colour Laser Printer

Up to 19 ppm in black or colour
As fast as 13 seconds time to first page
4800 Colour Quality, 1200 x 1200 dpi
312.5 MHz processor with 128MB RAM standard, expandable to 640MB
Optional 500-Sheet Drawer Ethernet-Ready
10/100BaseTX Front access for easy replacement of toner cartridges and paper



Our Price \$757 **Save \$388**
WebCode.....LEX0552

Lexmark X5470 All in One With Fax

Print fast! Up to 25 ppm black and 18 ppm colour
Full featured fax with convenient auto document feeder Direct photo printing from memory cards or with PictBridge
Scan-back proof sheet option allows for PC-free photo printing
1-Touch PC-free copy



Our Price \$208 **Save \$41**
WebCode.....LEX5470

Consumables

HP Photosmart C3180

- HP 92 Black Inkjet Print Cartridge (HPD9362) **\$22**
- HP 93 Tri-Color Inkjet Print Cartridge (HPD9361) **\$29**
- HP 95 Tri-color Inkjet Print Cartridge (HPD8766) **\$36**
- HP 99 Photo Inkjet Print Cartridge (HPD9369) **\$37**
- HP Ink Cartridge No 95/99 Combo Pack (HPD2071) **\$52**

HP Photosmart D7360, Officejet C5180 & C6180

- HP 02 Black Ink Cartridge (HPD8721) **\$27**
- HP 02 Cyan Ink Cartridge (HPD8771) **\$15**
- HP 02 Magenta Ink Print Cartridge (HPD8277) **\$15**
- HP 02 Yellow Ink Print Cartridge (HPD8773) **\$15**
- HP 02 Light Cyan Ink Cartridge (HPD8774) **\$15**
- HP 02 Light Mag Ink Print Cartridge (HPD8775) **\$15**

HP Officejet 5610

- HP 22 Tri-color Inkjet Print Cartridge (HPD9352) **\$26**
- HP 27 Black Inkjet Print Cartridge (HPD8772) **\$27**
- HP 56 Black Inkjet Print Cartridge (HPD6656) **\$30**
- HP 58 Photo Inkjet Print Cartridge (HPD6658) **\$36**

HP Officejet 6310

- HP 92 Black Inkjet Print Cartridge (HPD9362) **\$22**
- HP 93 Tri-Color Inkjet Print Cartridge (HPD9361) **\$29**
- HP 95 Tri-color Inkjet Print Cartridge (HPD8766) **\$36**
- HP 99 Photo Inkjet Print Cartridge (HPD9369) **\$37**
- HP 98 Black Inkjet Print Cartridge (HPD9364) **\$25**
- HP 100 Gray Photo Inkjet Print Cart (HPD9368) **\$37**

Lexmark X342n

Lexmark High Yield Black Toner Cart (LEX6425) **\$165**

Lexmark X8350 & X5470

- Lexmark Photo Colour Ink Cartridge (LEX8515) **\$36**
- Lexmark Black Ink Cartridge (LEX8516) **\$28**
- Lexmark Ink Cartridge #32 Twin Pack (LEX6363) **\$51**
- Lexmark Ink Cartridge #32 / 33 Twin Pack (LEX6364) **\$55**

Lexmark T430DN

- Lexmark Toner Cartridge for T430 Black High Yield (LEX1439) **\$290**
- Lexmark Toner Cartridge for T430 Black Low Yield (LEX1438) **\$173**

Lexmark C522N

- Lexmark Toner Cartridge for C522 / C524 Black - C5220KS (LEX6436) **\$149**
- Lexmark Toner Cartridge for C522 / C524 Cyan - C5220CS (LEX6435) **\$169**
- Lexmark Toner Cartridge for C522 / C524 Magenta - C5220MS (LEX6437) **\$169**
- Lexmark Toner Cartridge for C522 / C524 Yellow - C5220YS (LEX6438) **\$169**
- Lexmark C52x Photoconductor Unit 4-Pack (LEX6434) **\$172**
- Lexmark Waste Toner Bottle for C524 - C52025X (LEX6432) **\$15**

1GB Cube Media Player With OLED Display Black

Product size (H x W x D mm): 25.4 x 25.4 x 25.4.
Product weight: 18g. Watch videos and photos with a 65K colored OLED (4 Lines). 3D surround and superior bass enhances your music listening experience.

Blue (ANY0359) \$174
Pink (ANY0358) \$174



Our Price \$174 **Save \$25**
WebCode... ANY0358

Plantronics Bluetooth Wireless Headset System for Mobile & Desk Phone

The Plantronics Voyager 510S Bluetooth Headset System combining both the wireless Voyager 510 Bluetooth Headset and Bluetooth Desktop Adapter allows you to seamlessly switch between your office phone and Bluetooth mobile phone.



Our Price \$328 **Save \$21**
WebCode... PLA0006

TP-link 108m wireless router with 4 port switch

108M Wireless LAN Router, 2.4GHz, 802.11g/b, built-in 4-port Switch. Adopts 108M Super GTM and 2x to 3x Extended RangeTM technologies. Access Control, Integrated Firewall, Detachable Antenna.

TP-link 108m Wireless USB adaptor (ANY0306) \$46
TP-link 108m Wireless PCMCIA adaptor (ANY0307) \$40
TP-link 108m Wireless PCI adaptor (ANY0308) \$42



Our Price \$85 **Save \$14**
WebCode... ANY0305

Mediatek 3.5" Wireless Hard Disk Media Player

The MG-350HD is so simple to use! Simply download movies, music or photos from the internet or through a P2P program; save the contents into a 3.5" HDD (to be purchased separately); stream the contents from a PC through a wireless LAN connection and then connect the unit to your TV to watch movies, listen to music or look at photos.

- Supports HD MPEG-2 and MPEG-4 files
- Supports JPEG, BMP, GIF and PNG still picture.
- Supports DVI, composite, s-video and component video outputs.
- 11g wireless connection and 10/100 ethernet port.
- USB 2.0 host port; USB storage devices can be attached and the stored content can be played directly.
- USB 2.0 slave port; provides an alternative way to download digital content from your PC directly.
- Ability to wirelessly stream media without a HDD.
- Enables file surfing from multiple sources on a TV using the remote control i.e. PCs on the network, HDD inside and USB devices attached."

Mediatek portable multimedia player/3.5 hdd enclosure (ALT2001) \$235



Our Price \$329 **Save \$70**
WebCode... ANY0349

i-rocks Accessories

MP3 Car DJ FM Transmitter, Now with track recognition

Black (IRS0026) \$58
Silver (IRS0024) \$58
White (IRS0025) \$58



350K Web camera With Mic/Earphone

Black / Silver (IRS0038) \$44



USB Skype/VOIP phone Save on call costs with VOIP



12 In 1 card reader with 3 port USB 2.0 Hub

Black (IRS0029) \$48
Green (IRS0036) \$48
Red (IRS0032) \$48
Silver (IRS0028) \$48



Portable USB 2.0 Card Reader Supports MMC, MMC4.0, RS MMC, RS MMC4.0, SD, Mini SD & T-Flash Cards

Black (IRS0041) \$16



Our Price \$58 **Save \$10**
WebCode... IRS0023

Our Price \$44 **Save \$5**
WebCode... IRS0038

Our Price \$49 **Save \$20**
WebCode... IRS0033

Our Price \$48 **Save \$25**
WebCode... IRS0030

Our Price \$16 **Save \$4**
WebCode... IRS0041

Aten 2 Port Desktop KVM

Rugged 2 or 4 port desktop KVM in metal chassis. Connect one keyboard, mouse and monitor to 2 or 4 computers. No software required. Operate via push button or Hotkey. Slim 3 in 1 cables included in the box

ATEN 4 Port Desktop KVM (ANY0273) \$119



Our Price \$68 **Save \$11**
WebCode... ANY0272

Aten 8 Port Rackmount PS2 KVM Switch With On Screen Display

No software required - PC selection via front panel switches, hot keys, or OSD. Quick view scan feature for monitoring selected PCs. PS2 and serial mouse emulation provided for system bootup. Console's PS2 mouse controls all connected PCs - even those with serial mice. Superior video quality; 1920x1440; DDC2B.

ATEN 4 Port Rackmount PS2 KVM Switch With On Screen Display (ANY0361) \$227



Our Price \$333 **Save \$16**
WebCode... ANY0362

Aten PS2 KVM Cables to suit CS-9134/CS-9138

- 2L-1000P Aten 1m PS2 KVM Cable (ANY0363) \$15
- 2L-1002P Aten 2m PS2 KVM Cable (ANY0364) \$17
- 2L-1003P Aten 3m PS2 KVM Cable (ANY0365) \$19
- 2L-1005P Aten 5m PS2 KVM Cable (ANY0366) \$29
- 2L-1010P Aten 10m PS2 KVM Cable (ANY0367) \$69
- 2L-1020P Aten 20m PS2 KVM Cable (ANY0368) \$99



Videomate PCI digital and analog TV tuner

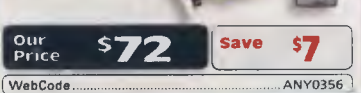
- Power Up Scheduling
- Remote Controlled Power On/Off
- Low-profile card design
- Analog video/audio capture
- Support HDTV



Our Price \$125 **Save \$74**
WebCode... ANY0180

Compro VideoMate T100 Digital PCI TV Tuner Card With Analog Video Capture

Compro VideoMate T100 is an advanced silicon digital TV tuner card with Philips 9-bit ADC chip and low-profile card design to provide free-to-air HDTV quality digital terrestrial TV reception. VideoMate T100 accompanied by Compro Picture Purifying Technology to bring a world of enhanced TV services directly to your PC, turning your computer into a home entertainment center.



Our Price \$72 **Save \$7**
WebCode... ANY0356

Compro VideoMate USB 2.0 U500 Digital TV Stick With Remote Control

Watch free to air digital TV on your laptop or desktop PC. Thumb size USB 2.0 device with remote control. Supports up to 1080i HDTV, EPG, subtitles and teletext. Software can allow you to setup the tv as your desktop wallpaper. Advanced PIP/POP feature can open up to 4 channel windows. Watch live TV and play recorded TV at the same time.



Our Price \$76 **Save \$13**
WebCode... ANY0357

Microsoft's LifeCam VX-6000
High Definition Video and Photos
Wide-Angle Lens 3 x Digital Zoom

Say goodbye to sharing memories across miles by only typing and talking. You're about to experience a whole new dimension in instant messaging. With the Microsoft LifeCam VX-6000, you'll see High Definition, live video images. You'll hear sounds and voices as if they were in the same room with you.



Our Price **\$117** **Save \$32**
WebCode MST8425

Microsoft's Wireless Laser Desktop 6000

Work free from wire hassles with an ergonomically designed Keyboard and Mouse. High Definition Laser Technology, Wireless Freedom, Magnifier, Zoom Slider and Comfort Curve Keyboard Layout



Our Price **\$152** **Save \$47**
WebCode MST8414

Microsoft's LifeCam NX-6000
Notebook Mobility, High Definition Video and photos. Includes carry case.

Whether you're at home, in the office, or on the road, keeping in touch with friends, family, and business associates is easy with the Microsoft LifeCam NX-6000. This compact, reliable webcam was designed especially for notebook computers.



Our Price **\$134** **Save \$45**
WebCode MST8432

Microsoft BONUS Wireless Laser Mouse or \$40 cash back

Purchase these products and receive either a Wireless Laser Mouse 6000 or \$40 cash back.

Microsoft Wireless Optical Desktop Elite

Get the ultimate in performance, style, and comfort in a single package. Give your desktop all the best wireless features and functionality, with a cushioned palm rest, a Microsoft Wireless IntelliMouse Explorer with revolutionary Tilt Wheel Technology, one-touch multimedia keys.



Our Price **\$127** **Save \$42**
WebCode MST8312

Microsoft Wireless Laser Mouse 5000
High Definition Laser Technology Magnifier / Tilt Wheel

Wireless Laser Technology for performance and precision! Microsoft High Definition Laser Technology delivers precise, responsive, and smooth tracking.



Our Price **\$69** **Save \$20**
WebCode MST8421

Microsoft Wireless Optical Desktop 2000
Comfort Curve Keyboard / Optical Mouse

Get comfort and freedom with this sleek wireless keyboard and mouse! The Microsoft Wireless Optical Desktop 2000 features a compact, Comfort Curve keyboard that lets your hands rest naturally and comfortably.



Our Price **\$77** **Save \$22**
WebCode MST8424

Comsol USB Cables

- Comsol 2 mtr USB 2.0 Peripheral cable type A male-B male - 480Mbps (COM8930) \$11
- Comsol 3 mtr USB 2.0 Peripheral cable type A male-B male - 480Mbps (COM8935) \$14
- Comsol 5 mtr USB 2.0 Peripheral cable type A male-B male - 480Mbps (COM8940) \$19



Comsol Firewire Cables

- Comsol 2mtr IEEE1394 FireWire Cable - 4 pin to 4 pin (COM6105) \$17
- Comsol 4.5mtr IEEE1394 FireWire Cable - 4 pin to 4 pin (COM6110) \$24
- Comsol 2mtr IEEE1394 FireWire Cable - 6 pin to 4 pin (COM6120) \$16
- Comsol 4.5mtr IEEE1394 FireWire Cable - 6 pin to 6 pin (COM6135) \$25



Comsol Ethernet Patch Cables

- Comsol 1 mtr RJ45 Cat 6 Enhanced Patch Cable Blue (COM9045) \$10
- Comsol 3mtr RJ45 Cat 6 Enhanced Patch Cable Blue (COM0112) \$15
- Comsol 5mtr RJ45 Cat 6 Enhanced Patch Cable Blue (COM9090) \$22
- Comsol 10mtr RJ45 Cat 6 Enhanced Patch Cable Blue (COM9105) \$27
- Comsol RJ45 Cat 6 Patch Cable (Blue) - 25m (COM0118) \$33
- Comsol RJ45 Cat 6 Patch Cable (Blue) - 0.5m (COM9030) \$7



Wacom Intuos3
Seriously-enhanced, Interactive & Creative

Intuos3 is the industry standard graphics tablet for digital art, animation, image editing and computer graphics. The Intuos3 features ExpressKeys and Touch Strip(s) can substitute all common modifiers and shortcuts, whilst the ergonomic pen delivers professional level functionality.

- 1024 levels of pressure sensitivity in the battery free and cordless pen
- 64 degrees of tilt sensitivity
- 8 express keys and 2 touch strips
- 5080 lines per inch resolution
- 200 points per second report rate
- USB connectivity for PC and Mac

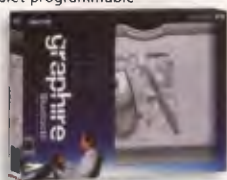


Academic 6x8 (WAC9983) \$369
Intuos3 9 x 12 (WAC0930) \$647
Intuos3 12 x 19 wide format (WAC1231) \$1042

Our Price **\$484** **Save \$65**
WebCode WAC0630

Wacom Graphire Bluetooth (6x8) - Wireless Freedom

With the new Graphire Bluetooth you have the ability to do pen based drawing, sketching, illustration and powerful presentations where and when they want - without any annoying cabling. A battery life of up to 25 hours, two on-tablet programmable ExpressKeys designed to optimize workflow by providing quick access to commonly used modifiers, mouse-clicks, and keystrokes plus a 4 meter cable on the universal power adapter make it a very convenient tool.



Bundled software:

- Adobe Photoshop elements 3
- Corel Painter Essentials2
- Inspiration

Bluetooth
Our Price **\$496** **Save \$23**
WebCode WAC0104

Wacom BIZ Tablet
The ideal tool to enhance your presentations!

Compact and portable with a host of powerful features, the BizTablet will revolutionize your presentation and communication abilities.

With the two programmable function keys on the tablet and two programmable side-switches on the pen, you can set any shortcuts you prefer.

Make handwriting notes directly into your documents.

- Tablet size: 156(W) x 139(D) x 13.5 (H) mm
- Active area: 81x58 mm
- 512 levels of pressure sensitivity

Bundled Software:
JustWrite Office - Lets you directly write into your documents.



Our Price **\$61** **Save \$9**
WebCode WAC0105

Wacom Interactive Pen Display DTI-520
The Evolution of Visual Communication

Combines the XGA 15" TFT LCD monitor with a Wacom tablet. It can be easily connected to a projector for an enlarged screen. You can hand-write and draw naturally on screen with an intuitive pen interface, while the audience can see the annotations in real-time on the projector. Lets you maintain face-to-face communication and integrate feedback easily.

- Flush LCD cover surface lets your hands and ideas flow easily
- Adjust inclination angle of display for easy stroke creation and viewing
- Cordless & battery-free pen with DuoSwitch
- 512 levels of Pressure Sensitivity for pen tip and eraser



Academic
Our Price **\$1621** **Save \$29**
WebCode WAC0200

Input Devices & Tablets

RENT SMART
BECAUSE BUYING ISN'T

See page 2 for details!

G-11 Gaming Keyboard

Backlit characters on all keys help you play all night long. 18 programmable G keys let you create custom macros for all of your games. Also features two full-speed USB ports and media control keys.



Our Price **\$93** Save **\$36**
WebCode.....LOG3591

Logitech MX-3200 Cordless Desktop

This advanced cordless desktop lets you enjoy all your PC's media and communication features with leading-edge performance, comfort, and style. Windows Vista-ready controls include dynamic search and zoom. Easily manage your Internet calls with the communication console and comfortably listen to music with dedicated media controls. Precision laser mouse features tilt-wheel navigation, document flip and zoom.



Our Price **\$143** Save **\$56**
WebCode.....LOG3587

Logitech LX-710 Cordless Desktop

The Logitech Cordless Desktop LX 710 maximises your enjoyment of digital photos and music. Dedicated photo controls let you view, edit and share photos and images while music controls give you instant access to your favourite media applications. Precision laser cordless mouse features vertical and horizontal scrolling plus zoom.



Our Price **\$107** Save **\$42**
WebCode.....LOG3586

Extreme 3D Pro Joystick

Fully programmable buttons give you an incredible amount of flexibility and performance. The precise twist handle includes an 8-way rubber hat switch.



Our Price **\$47** Save **\$12**
WebCode.....LOG3392

Logitech Cordless Desktop S 510

The perfect match with today's flat-screen systems. Its innovative, flatter keyboard design creates a consistent desktop look and amazing comfort while a built-in palm rest provides better support for users' wrists. Integrated one-touch media and Internet navigation controls include a "Shuffle" key for random music mixes. Extra features include one-touch image zooming, handy photo rotation and programmable F-keys that launch applications. An advanced optical mouse delivers fast, consistent performance.



Our Price **\$77** Save **\$22**
WebCode.....LOG3514

Logitech Cordless Desktop EX 110

The Cordless Desktop® EX 110 makes it incredibly easy and affordable to go cordless—in style. Quick, simple to set up, and completely reliable. Enjoy the freedom and precision of an 800-dpi optical mouse, plus one-touch controls that make music, Internet, and other frequent functions simpler. Superb quality and value.



Our Price **\$62** Save **\$17**
WebCode.....LOG3507

Logitech R-20 2.1 speakers

The Logitech R-20 2.1 speakers offer dynamic audio in a sleek, compact design. Its ported wood subwoofer displaces more air for deep bass. Connect these speakers easily to PCs, CD and MP3 players.



Our Price **\$37** Save **\$12**
WebCode.....LOG3489

Logitech QuickCam Ultra Vision

Enjoy a video calling experience of being there like never before. QuickCam® Ultra Vision's extra large, precision-engineered glass lens and RightLight™ 2 Technology provide up to twice the image clarity of other cameras. Conversations are crisp, clear and echo-free with the integrated microphone and RightSound™ Technology. 2-year warranty.



Our Price **\$187** Save **\$62**
WebCode.....LOG3578

Logitech QuickCam Pro 5000

Designed to provide a more personal communication experience, the Logitech QuickCam Pro 5000's exclusive technologies ensure sharp video and clear audio. Logitech RightLight(TM) technology provides optimum video even in dim lighting while RightSound(TM) technology eliminates annoying echo and allows natural conversations..



Our Price **\$115** Save **\$34**
WebCode.....LOG3540

Logitech Cordless Presenter

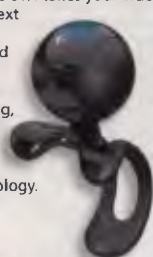
Take advantage of its 50-foot range to control your presentations while moving around an auditorium with confidence. A built-in LCD timer with vibration alerts helps you effectively manage your time.



Our Price **\$84** Save **\$15**
WebCode.....LOG3495

Logitech QuickCam Communicate STX

QuickCam® Communicate STX takes your video communications to the next level. Clear video with 640 x 480 VGA quality and RightLight™ Technology provides improved image clarity even in dim lighting, and your calls are always echo-free with the integrated microphone and RightSound™ Technology. Windows® 2000 & XP. 2-year warranty.



Our Price **\$75** Save **\$24**
WebCode.....LOG3492

Logitech QuickCam Family

It is easy to set-up and use and lets you make a video call over the Internet with a single click. With 30 frames per second live video and Logitech's expertise, QuickCam Family is a great first step in video communication. Works with MSN Messenger, Skype and Yahoo Messenger. 2-year warranty.



Our Price **\$34** Save **\$15**
WebCode.....LOG3580

Logitech Q/C for Notebooks

Enjoy unprecedented mobile video performance and natural video conversations from your laptop. A true 1.3 MP sensor with RightLight™ technology provides sharp images even in dim light. RightSound™ ensures clear, echo-free audio with or without a headset.



Our Price **\$54** Save **\$25**
WebCode.....LOG3487

See page 2 for details!
smart BUY club 3% rebate
Did you know that you can get up to 3% rebate on every order?
www.csw.com.au/smartbuy

Logitech Harmony 880 Remote Control

Optimised for complicated HDTV and PVR systems, the Harmony 880 helps you tame tough configurations like switching your television between video aspect ratios depending on the program source. The interactive color display lets you quickly choose a 16:9 ratio for movies and HDTV, or a standard 4:3 ratio for basic television programming.

Easy to setup

Just connect to your computer and the Web wizard walks you through a simple set up.

Easy to Use

Just press one of the Activity buttons.



GIVE IDEAS UNDER \$250

Our Price \$229 **Save \$170**
WebCode.....LOG3499

Logitech Harmony 520 Remote Control

Control your Home Entertainment system at the touch of only one button. Easy to use with its activities; watch TV, a DVD, play a videogame.... it is also very easy to set up. With instant access to an internet-based worldwide database of infra-red codes, you can control all devices from all manufacturers, including HDTV, satellite and cable boxes. The Harmony 520 will make Home Entertainment the way it should be: simple.



GIVE IDEAS UNDER \$150

Our Price \$117 **Save \$62**
WebCode.....LOG3527

Optical Mouse Silver & Black

The World's best selling optical mouse just got better. The new High-Definition optical mouse (1000 dpi) delivers smoother more accurate cursor control.



Our Price \$21 **Save \$8**
Black WebCode.....LOG3572
Silver WebCode.....LOG3561

Logitech Laser Cordless Mouse MX-Revolution

The world's most advanced mouse, MX™ Revolution streamlines the way you work with hyper-fast scrolling, instant application switching, touch-to-search, and high-resolution zoom.

Rechargeable Li-ion battery, full-speed USB wireless, and advanced laser tracking deliver precision control and complete convenience. 3-year warranty. USB. PC/Mac.



NEW

Our Price \$133 **Save \$46**
WebCode.....LOG3583

Logitech MX-610 Laser Cordless Mouse

The Logitech® MX™610 Laser Cordless Mouse redefines performance with ultra-precise laser tracking and 2.4 GHz digital cordless technology. As the world's first smart mouse, it automatically turns on/off with your computer, detects and eliminates wireless interference and lights up when you get new messages from friends or associates. USB and PS/2. 5-year warranty.



Our Price \$75 **Save \$24**
WebCode.....LOG3512

V450 Cordless Laser Mouse for NB

Precision laser tracking for smooth, responsive cursor control. Its ergonomically designed shape and soft rubber grips set the new standard for comfort on the road.



Our Price \$61 **Save \$38**
WebCode.....LOG3568

Logitech Laser Cordless Mouse VX- Revolution

The ultimate notebook mouse, VX Revolution™ turbocharges your digital experience with a nearly frictionless alloy scroll wheel that lets you fly through long documents at hyper-speed. Perform instant web queries with the convenient search button, and effortlessly zoom in and out of photos and documents. 2.4 GHz cordless and laser tracking. 3-year warranty. USB. PC/Mac.



NEW

Our Price \$95 **Save \$34**
WebCode.....LOG3582

Logitech Cordless Notebook Mouse Bluetooth

The Logitech V270 Cordless Optical Notebook Mouse for Bluetooth works without a receiver for the ultimate in hassle-free mobility. Connects instantly to your Bluetooth-enabled notebook, providing up to 30 feet of cordless range. Power-saving modes, battery indicator light, and an on/off switch manage power wisely. Incredibly smooth tracking for maximum productivity while traveling.



Our Price \$63 **Save \$26**
WebCode.....LOG3534

V200 Cordless Ntbk Mouse

Maximise productivity, minimise downtime. Compact, with up to 1 year of battery life. Reliable performance on the road. With 2.4 GHz cordless technology providing interference-free operation.



Our Price \$56 **Save \$13**
WebCode.....LOG3498

Logitech Premium Notebook Headset

The Premium Notebook Headset features a comfortable and adjustable, behind-the-head design. When not in use, it folds for storage into a protective travel case. In addition, it offers high-performance audio features including a noise cancelling microphone, a convenient inline volume control and both Digital USB and traditional Analog connectivity.



Our Price \$76 **Save \$23**
WebCode.....LOG3573

Logitech 350 USB Headset

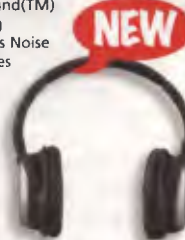
Chat in comfort using digital USB technology, it enhances audio quality and provides simple plug and play functionality. This convenient headset features soft touch in-line volume and mute controls. Its noise canceling microphone improves microphone performance, while the plush ear pads and premium headband enhance comfort.



Our Price \$52 **Save \$27**
WebCode.....LOG3555

Logitech Noise Cancelling Headphones

Cancel out distractions and escape with your music. With SilentSound(TM) active noise canceling technology, Logitech's Noise Cancelling Headphones and custom fit ear cushions reduce outside noise so you can enjoy every note.



Our Price \$197 **Save \$52**
WebCode.....LOG3543

Logitech USB Desktop Microphone

Incorporates a noise-cancelling mic and provides easy plug and play operation. Its design is sleek and compact for any desktop and works on PCs and MACs.



Our Price \$32 **Save \$17**
WebCode.....LOG3386

Nokia 3120 Mobile Phone

The funky, yet chic Nokia 3120 is packed with features allowing you to mix business with pleasure: MMS, Java technology, Tri-band and more. Complement it with stylish enhancements now.



Our Price \$167 **Save \$32**
WebCode.....NMP3120

Nokia E61 3G Handset

- Optimised for mobile email
- Choice of email solutions
- Attachment content support capability
- Extensive range of connectivity methods
- Familiar Nokia voice functionalities
- Premium metals and thin construction



Our Price \$620 **Save \$129**
WebCode.....NME0061

Nokia 6131 Mobile Phone

- Elegantly crafted with smooth edges and a rich textured feel
- One-touch push-to-open key and ergonomic keypad
- Impressive and large 2.2" QVGA main display in 16.7 million colours
- Integrated 1.3 megapixel camera with 8x digital zoom and video recorder
- Seamless connectivity with Bluetooth wireless technology, Infrared and USB 2.0
- Integrated digital music player and FM stereo radio



Our Price \$395 **Save \$84**
WebCode.....NMH6131

Exigo Silverblade USB 2 flash Drive

Storing and moving data has never been so easy! The new Exigo Flash Drives come in a stylish, iPod-like casing, sporting a fast USB 2.0 controller. With capacities including 2GB & 4GB you finally have the full flexibility in storing and moving data. Exigo Flash Drives offer the best value for money on the market today!

Features:

- Exceptionally stylish and trendy look
- Designed to utilize the high bandwidth of USB 2.0 interface
- Ready to withstand harsh working environments and protect the valuable data
- Capacity 2GB & 4GB
- No Driver Required, except on Windows 98SE
- Password protected for increased security (30 days trial)
- Bootable



Our Price \$68 **Save \$61** **Our Price \$128** **Save \$91**
WebCode.....EX10001 WebCode.....EX10002

Exigo MP3 Player

Flash Based MP3 players changed the way people share their passion for music. With the Exigo MP3 Players line you can enjoy a wide range of functions and crystal clear quality of sound at a reasonable price.

- ID3 text display: Seven colour backlight
- Music Format: MP3 or WMA
- Equalizer Mode: 7 different modes (Natural, Rock, POP, Classic, Soft, Jazz, DBB)
- 5 Playing Modes: Cycle one/ Cycle all/ Play random/ Play normal/ Special preview mode
- 1 pc AAA battery: Can play more than 6 hours
- Integrated FM Radio
- Voice recording: 270mins per 64MB
- Frequency Response: 20Hz-20KHz
- Warranty: 2 Years
- Support OS: Windows 98/Me/2000/XP/Mac OS 9.X/Linux 2.4.X



Our Price \$66 **Save \$22** **Our Price \$97** **Save \$32**
WebCode.....EX10006 WebCode.....EX10007

SanDisk Ultra II

Action Photography. Professional Results.

The SanDisk Ultra II cards are unbeatable and best-in-class:

- Write speed (mini) = 9MB/sec / Read speed (mini) = 10MB/sec
- Features high density flash memory and optimized controller technology lets you save large image files faster

Ultra II CF Card 1GB (SIM1002) \$58
Ultra II SD Card 1GB (SIM5987) \$58
Ultra II SD Plus 1GB (SAN0027) \$58

Ultra II Memory Stick Pro Duo 1GB (SAN0065) \$77

*Available in capacities up to 4.0GB

Our Price \$99 **Save \$30**
WebCode.....SIM0691

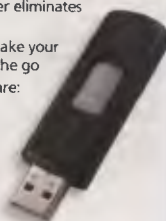
Our Price \$96 **Save \$33**
WebCode.....SIM0457

SanDisk Cruzer Micro U3

SanDisk Cruzer Micro new design is a small, smart and secure USB Flash Drive.

- Small, compact light weight design
- New Retractable USB slider eliminates the need for caps
- U3 smart enables you to take your portable applications on the go
- Preloaded with U3 software: CruzerSync, SignupShield, SKYPE and AVAST

512MB (SAN0063) \$27
2GB (SAN0061) \$79
4GB (SAN0062) \$158



Our Price \$39 **Save \$10**
WebCode.....SAN0060

SanDisk Titanium U3

The New look Cruzer Titanium is fast, strong and unbeatable:

- Strong Liquidmetal casing crush resistant over 2,000lbs
- Retractable USB slider eliminates the need for caps
- Lightning speed of 15MB/s read speed & 9MB/s write speed
- U3 smart enables you to take your portable applications on the go
- Preloaded with U3 software: CruzerSync, SignupShield, SKYPE and AVAST

2GB (SAN0069) \$97

Our Price \$49 **Save \$10**
WebCode.....SAN0068

Exigo 1GB Secure Digital (SD) Card

Storing and moving data has never been so easy! With capacities ranging from 512MB to 2GB, you finally have the full flexibility in storing and moving data. Exigo memory cards offer the best value for money on the market today!

- Stylish and trendy look
- Designed to utilize the high bandwidth of SD interface
- Ready to withstand harsh working environments and protect the valuable data
- Capacity 512MB, 1GB & 2GB Capacities

• 512MB (EX10003) \$22
• 2GB (EX10005) \$78



Our Price \$42 **Save \$27**
WebCode.....EX10004

SanDisk Cruzer Crossfire

SanDisk Cruzer Crossfire USB Flash Drive is specially designed to make your console or PC gaming experience portable.

- Compatible with any device with a USB port (PC, Xbox 360)
- Allows you to save your game data, view and store images, play your favourite videos and listen to digital music.
- Pre loaded gaming content Prince of Persia or CSI

512MB (SAN0039) \$27
1GB (SAN0040) \$39
4GB (SAN0070) \$158

Our Price \$79 **Save \$20**
WebCode.....SAN0067

SanDisk Cruzer Profile 1GB

SanDisk's Cruzer Profile provides the ultimate in data security:

- Fingerprint identification technology
- Added personal security capability to safeguard data and IE passwords
- Write speed (minimum) = 5MB/second / Read speed (minimum) = 8MB/second



Our Price \$55 **Save \$14**
WebCode.....SAN0026

See page 2 for details!
smart BUY club 3% rebate
Did you know that you can get up to 3% rebate on every order?
www.csw.com.au/smartbuy

Visit www.csw.com.au to view the complete range of media!



Now you can push the performance limits of CD writing - it's easy with 52x CD-R media from Verbatim. Tested and certified by leading 52x drive manufacturers.



Recognized as the choice for professional users, DataLifePlus DVD-R discs are based on an advanced "Metal Azo" recording dye, which provides the highest level of performance, reliability, and archival life.

Verbatim CD-R Optical Media

WebCode	Product Description	Price	SAVE
VBM1856	94935 Verbatim CD-R 80 Min Slim Case 10 Pk 52x	\$7	\$2
VBM1857	94611 Verbatim CD-R 80 Min Colours Slim Case 25 Pk 52x	\$18	\$2
VBM4961	94691 Verbatim CD-R 80 Min 50 Pk Spindle 52x	\$18	\$5
VBM4554	94554 Verbatim CD-R 80 Min Spindle 100 Pk 52x	\$36	\$5
VBM5005	95005 Verbatim CD-R 80 Min Silver IJ Printable 50 Pk 52x	\$18	\$5
VBM4190	41908 Verbatim CD-R 80 Min White IJ Printable 50 Pk 52x	\$23	\$1
VBM3133	43133 DataLifePlus CD-RW 80 Min Colour Slim Case 5 Pk 2x-4x	\$5	\$2

Verbatim DVD Optical Media

WebCode	Product Description	Price	SAVE
VBM0131	95165 Verbatim DVD-R DL 8.5GB Jewel Case 3 Pk 2-4x	\$16	\$3
VBM9510	95100 Verbatim DVD-R 4.7GB 10 Pk Spindle 16x	\$6	\$2
VBM0580	95058 Verbatim DVD-R 4.7GB 25Pk Spindle 16x	\$16	\$4
VBM1973	95137 Verbatim DVD-R 4.7GB White InkJet Printable 50 Pk 16x	\$34	\$4
VBM5014	95014 DataLifePlus DVD+R DL 8.5GB Jewel Case 3 Pk 2.4x	\$14	\$3
VBM4981	95123 DataLifePlus DVD+R DL 8.5GB IJ Printable 20Pk Spindle 2.4x	\$82	\$17
VBM5032	95032 DataLifePlus DVD+R 4.7GB Spindle 10 Pk 16x	\$8	\$1
VBM5033	95033 Verbatim DVD+R 4.7GB 25Pk Spindle 16x	\$14	\$9
VBM1974	95136 Verbatim DVD+R 4.7GB White InkJet Printable 50 Pk 16x	\$32	\$7
VBM1995	95145 Verbatim DVD+R 4.7GB White InkJet Printable 100 Pk 16x	\$64	\$14
VBM5043	95043 DataLifePlus DVD+RW 4.7 GB Jewel Case 5 Pk 4x	\$8	\$2
VBM5101	95101 DVD+R 4.7GB 16X 50pk Spindle	\$31	\$4
VBM5037	95037 DVD+R 4.7GB 16X 50pk Spindle	\$31	\$4

Canon Papers

Canon 6 x 4" Glossy Photo 20 Sheet (CAN0103)	\$10
Canon 7 x 5" Glossy Photo 20 Sheet (CAN0162)	\$16
Canon A3 106gsm 20 Sheet (CAN0111)	\$10
Canon A3 Photo Quality 165gsm (CAN0194)	\$26
Canon A3 245gsm 10 Sheet (CAN0113)	\$39
Canon A4 Glossy Photo 165gsm (CAN0173)	\$14
Canon A4 110gsm 200 Sheet (CAN0080)	\$35

Epson Papers

Epson 6 x 4, 50 Sheet (EPA1735)	\$18
Epson 150 x 100, 50 Sheet (EPA1729)	\$16
Epson 6 x 4" Glossy Photo 20 Pack (EPA1706)	\$10
Epson A3 Photo 20 Sheet (EPA2007)	\$94
Epson A3 251gsm 20 Sheet (EPA2006)	\$119
Epson A4 245gsm 20 Sheet (EPA5065)	\$38
Epson A4 Double Sided Matte 178gsm 50 Sheet (APA5063)	\$34

HP Papers

HP A4 Semi Gloss 170gsm 100 Sheet (HPD2511)	\$23
HP A3 Laser Photo Glossy 200 Sheet (HPD6548)	\$59
HP A4 Semi Gloss 170gsm 40 Sheet (HPD2143)	\$16
HP A4 Laser Photo Glossy 200 Sheet (HPD6547)	\$44
HP A4 Laser Photo Matte 100 Sheet (HPD6550)	\$24

Kodak Papers

Kodak Premium 4 x 6 Glossy Photo Paper 100 Sheet Pack (KOD7142)	\$25
Kodak A4 Pro 50 Sheet (KOD2091)	\$55
Kodak A3 Pro 20 Sheet (KOD2958)	\$62
Kodak Premium A4 Glossy Photo Paper 20 Sheet Pack (KOD7729)	\$15
Kodak Premium A4 Glossy Photo Paper 50 Sheet Pack (KOD7737)	\$25
Kodak Pro Photo paper 50 sheet (KOD6031)	\$137

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WebCode.....CLI0001

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Exigo 1GB Secure Digital (SD) Card

Storing and moving data has never been so easy! With capacities ranging from 512MB to 2GB, you finally have the full flexibility in storing and moving data. Exigo memory cards offer the best value for money on the market today!

- 512MB (EXI0003) \$22
- 2GB (EXI0005) \$78

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to City
Software



Our Price **\$42** Save **\$27**
WebCode.....EXI0004

Secure Digital Cards

- SanDisk Secure Digital Card
- 256MB (SIM0202) \$22
 - 512MB (SIM0387) \$28
 - 1GB (SIM0388) \$47
 - 2GB (SAN0030) \$88

- SanDisk Secure Digital Ultra
- 1GB (SIM5987) \$58

Compact Flash Cards

- SanDisk
- 512MB (SIM0190) \$28
 - 1GB (SIM0191) \$52
 - 2GB (SIM0690) \$103
 - 4GB (SAN0036) \$180

- SanDisk Ultra II
- 1GB (SIM1002) \$62
 - 2GB (SIM0691) \$110
 - 4GB (SAN0023) \$218

XD Picture Cards

- Olympus
- 512MB (OLY0018) \$67
 - 1GB (OLY0102) \$82

- SanDisk
- 512MB (SIM0382) \$55
 - 1GB (SAN0038) \$82

Memory Stick

- Memory Stick Pro Duo
- 512MB (SIM0702) \$42
 - 1GB (SAN0025) \$68
 - 2GB (SAN0028) \$115

Kodak C433 4MP Digital Camera

Take the guesswork out of going digital with convenient features and quality pictures.

- 4.0 MP for prints up to 20 x 30 in. (50 x 76 cm)
- 3X optical zoom lens, 5X advanced digital zoom
- 1.8 in. (4.6 cm) indoor/outdoor colour display
- On-camera cropping
- 16MB internal memory
- Two-shot self-timer
- Undo-delete function



4
Megapixel

3x
Optical Zoom

1.8"
LCD Screen

Our Price **\$158** Save **\$11**
WebCode.....KOD0433

Casio Exilim EX-Z600 6MP Blue

The EX-Z600 offers 6.0 megapixel high resolution photos in a stylish, compact, and pocket-sized package. The extra large 2.7-inch Super Bright LCD produces an impressive luminance of 1200 candelas per square meter. This significant advancement makes the LCD easier to see, especially when viewed in the sunny outdoors. In auto mode, the LCD automatically adjusts to the brightness of the surrounding environment. The EX-Z600's Super Life Battery now supports a staggering 550 shots per charge.

Available: Silver, Black, Brown & Red



6
Megapixel

3x
Optical Zoom

2.7"
LCD Screen

Our Price **\$533** Save **\$46**
WebCode.....CDC0002

Canon IXUS 850IS 7.1MP Digital Camer Superior technology for the discerning photographer.

- 7.1 Megapixel
- Canon 3.8x optical zoom lens with Optical Image Stabilizer
- 28mm wide lens
- Huge 2.5 inch LCD screen)
- Super fast DiGIC III Imaging Processor with ISO 1600
- Face Detect technology with Auto Focus and Auto Exposure



7.1
Megapixel

3.8x
Optical Zoom

2.5"
LCD Screen

Our Price **\$621** Save **\$128**
WebCode.....CAN0568

Canon DC100 DVD Video Camera ultra compact, Real Widescreen DVD camcorder with powerful zoom that's easy to use.

- Super small and lightweight for ultimate portability
- Direct-to-DVD shooting for convenient playback on home DVD players.
- Powerful Canon 25x video zoom lens.
- 800K CCD and DiGIC DV for high quality videos.
- Wide 2.7" LCD Screen.
- Photo capture to DVD
- Real 16:9 Widescreen recording



16:9
Widescreen

25x
Optical zoom

2.7"
LCD Screen

Our Price **\$687** Save **\$212**
WebCode.....CAN0511

Canon Powershot A640 Digital Camera Creativity, quality and flexibility in classic Powershot style.

Boasting a powerful Canon 4x optical zoom lens, a 2.5" vari-angle LCD screen and Canon's intuitive DiGIC processor, the 10.0MP PowerShot A640 deliver simply better pictures. With a choice of manual controls and an extensive range of shooting modes, you can be as creative as you like or let Canon technology assist you.



10
Megapixel

4x
Optical Zoom

2.5"
LCD Screen

Our Price **\$517** Save **\$82**
WebCode.....CAN0526

Olympus MJU725SW Digital Camera

For those who like to take part in active sports and other lively pursuits, life can sometimes get pretty tough. That's why it's good to know that Olympus caters specifically for people with active lifestyles that accept no limits. With the shock and waterproof µ 725 SW they needn't forgo photographic freedom while taking part in the activities they enjoy.

- Water Proof (3m)
- Shock Proof (1.5m)
- 19.1 MB Internal Memory

Blue (OLY0084) \$557



7.1
Megapixel

3x
Optical Zoom

2.5"
LCD Screen

Our Price **\$557** Save **\$42**
WebCode.....OLY0085

Sony DSCN1 8.1MP

Cyber-shot DSCN1 opens a new world of shooting and sharing, with 8.1 megapixel performance and internal memory that holds up to 500 VGA images for pocket album viewing anywhere, anytime.

A huge 3.0" LCD Monitor with Clear Photo LCD Plus technology provides touch-screen convenience for controlling camera functions and searching thumbnail images – and Free Spot AF lets you focus on a subject by just touching it on screen.



8.1
Megapixel

3x
Optical Zoom

3"
LCD Screen

Our Price **\$718** Save **\$181**
WebCode.....SNY0705

Sony DCRSR100 30GB Video Camera

Using the DCRSR100 Hard Disc Drive HDD Handycam, your movie-making experience is complete. The sleek, compact design holds powerful features that let you capture superb images and sound. DCRSR100 truly takes HDD Camcorders to the next level. The high capacity, high integrity storage system lets you record up to approximately 21 hours of movies, while the superior HDD Smart Protection prevents data loss and protects the hard drive.



3
Megapixel

12 h
Recording

2.7"
LCD Screen

Our Price **\$1555** Save **\$244**
WebCode.....SNY0077

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for
details!

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Belkin 800VA Universal UPS w/AVR

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Our Price \$296 **Save \$103**
WebCode.....BEL0165

Belkin Hi-Speed USB 2.0 7-Port Hub

The latest innovation from USB leader Belkin lets you connect up to seven devices quickly and easily. Our Hi-Speed USB 2.0 7-Port Hub features two, top-loading downstream USB ports. Now you can enjoy fast access for temporary device connections such as USB thumb drives, media readers, and for USB lights, fans, and other accessories. Monitoring your device activity is simpler than ever with LEDs for master power status and all port activity.



Our Price \$66 **Save \$13**
WebCode.....BEL0263

Belkin Kickstand Case for 5G iPod

This innovative Case for the stunning new 5G iPod helps you get the most from this new music marvel. The Case offers a snug fit with premiere quality leather construction to protect your iPod as you take it with you on the move. As with most Belkin iPod accessories, there is an unbeatable lifetime warranty to ensure your complete satisfaction.



Our Price \$23 **Save \$16**
WebCode.....BEL4068

Belkin FireWire 6-Port Hub

The latest innovation from Belkin delivers six, peer-to-peer FireWire ports that support data throughput of up to 400Mbps. Our new FireWire 6-Port Hub connects seamlessly with your FireWire DV camcorders, web cams, FireWire storage devices, scanners, printers, and other DV-compatible multimedia devices.



Our Price \$66 **Save \$13**
WebCode.....BEL2825

Belkin Hi-Speed USB 2.0 3-port hub & 15-in-1 Media Reader/Writer

The Belkin Hi-Speed USB 2.0 3-port hub & 15-in-1 Media Reader/Writer offers you the complete desktop connectivity solution. It lets you connect up to 3 USB 1.1 or 2.0 devices at transfer speeds of up to 480Mbps. It lets you transfer files from one mediacard to another, or transfer files from all four media cards simultaneously.



Our Price \$58 **Save \$11**
WebCode.....BEL0352

Belkin Flip Case for iPod nano - White

This innovative Case for the stunning new iPod nano helps you get the most from this new music marvel. The Case offers a snug fit with premiere quality leather construction to protect your nano player as you take it with you on the move. Built-in cable management ensures easy access and quick storage when you need it. All Belkin iPod accessories come with an unbeatable lifetime warranty to ensure your complete satisfaction.



Our Price \$24 **Save \$5**
WebCode.....BEL4609

Belkin Bluetooth USB Adapter - 10 metres

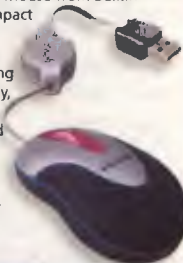
Now you can add Bluetooth wireless capabilities to your USB desktop or notebook computer. The Adapter is ideal for home or mobile use. It allows your computer to make cable-free connections to other Bluetooth devices quickly, without having to establish a networking infrastructure.



Our Price \$62 **Save \$7**
WebCode.....BEL6327

Belkin MiniGlow Optical Mouse w/Retractable Cord

The MiniGlow Optical Mouse from Belkin provides a fun and compact input solution for the mobile user. It features attractive color-changing lights that glow brightly, day or night-USB and PS2. Take it on the road easily and use it with optical precision on virtually any surface- anywhere you use your USB laptop.



Our Price \$28 **Save \$11**
WebCode.....BEL2826

Belkin 7-in-1 Retractable Cable Travel Pack

Carry and organize your USB and networking cables-everywhere The 7-in-1 Retractable Cable Travel Pack from Belkin offers a great solution for the mobile professional. It gives you an easy way to connect your USB and networking devices to your notebook computer, virtually anywhere you go.



Our Price \$37 **Save \$12**
WebCode.....BEL4669

Belkin Hi-Speed USB 2.0 External Drive Enclosure Kit

With its bandwidth 40 times greater than USB 1.1, Hi-Speed USB 2.0 provides the ideal storage capacity and ultra fast speeds. Simply insert a hard drive or DVD burner or CD Burner and create a portable media device. Ideal for loading large files and transferring between desktop or laptop computers.



Our Price \$67 **Save \$10**
WebCode.....BEL0353

Belkin 2-Port KVM Switch with Audio Support and Built-In Cabling, USB

This Switch provides an affordable KVM solution that saves workspace while giving you control of two USB computers from one console. Its compact design-with 8-foot, built-in cabling-saves you time on installation, space on your desktop, and money you don't have to spend on cables and peripherals.



Our Price \$87 **Save \$12**
WebCode.....BEL0272

Belkin Rechargeable Wireless Optical Mouse

The Rechargeable Wireless Optical Mouse from Belkin provides advanced wireless mouse functionality along with the convenience of recharging from the base. Now you can enjoy reliable optical precision with the assurance that our handy recharge function keeps your Mouse constantly ready to operate.



Our Price \$45 **Save \$24**
WebCode.....BEL9997

Belkin NE-WTL LADIES LEATHER TOTE BAG

The NE-WTL Leather Tote by Belkin packs your electronic essentials and provides extra storage for your personal items, in one great bag. A perfect design for the busy woman executive, the NE-WTL offers lightweight mobile comfort, and includes long, sturdy handles for either shoulder- or hand-carried transport.



Our Price \$97 **Save \$32**
WebCode.....BEL2572

Belkin Wireless Keypad with Multimedia Controls

The Wireless USB Mini Keypad is perfect and smart solution for spreadsheet, accounting and financial applications that require fast and accurate entry of numeric data. The wireless technology provides a free of cables workspace. Multimedia applications can be controlled.



Our Price \$55 **Save \$9**
WebCode.....BEL2925

Peripherals

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Microsoft Student with Encarta Reference Library 2007

- Helps students get homework done quickly and confidently
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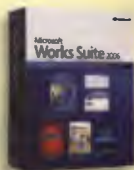


Our Price **\$117** **Save \$33**
WebCode MSC2939

Microsoft Works Suite 2006

Five great titles in one affordable package. Includes full versions of Word 2002, Works 8, Encarta Standard 2006, Digital Image Standard 2006 and Money Standard.

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Our Price **\$131** **Save \$38**
WebCode MSC2935

Windows Server 2003 R2

This Edition is the network operating system for small organisations and departmental use. It delivers intelligent file and printer sharing, secure Internet connectivity, centralised desktop application deployment, and Web solutions.

- Std 5 Client R2 Edu (MSS0061) **\$842**
- Std 5 Client R2 (MSS0063) **\$1586**
- Std 10 Client R2 (MSS0062) **\$1869**



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Std 10 Client R2 Edu
Our Price **\$992** **Save \$79**
WebCode MSS0060

Office 2004 for Mac

Office 2004 for Mac gives you all the leading presentation, spreadsheet, word processing, and e-mail software Edition in one convenient, specially priced package.

- Standard (MSA3747) **\$572**
- Upgrade (MSA3748) **\$341**
- Student & Teacher (MAS3749) **\$220**



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Student & Teacher Version
Our Price **\$220** **Save \$29**
WebCode MSA3749

Office 2004 Pro for Mac

Microsoft Office 2004 for Mac Professional Edition gives you all the exciting new features of Office 2004 Standard Edition, plus Microsoft Virtual PC for Mac Version 7 to keep you better connected with the PC users in your professional and personal life.

Licensing pricing available.

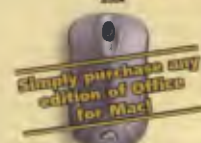


- Full (MSA3750) **\$759**
- Upgrade (MSA3751) **\$484**

Upgrade
Our Price **\$484** **Save \$65**
WebCode MSA3751

Want a Bonus wireless mouse or a \$50 Saving? It's your choice.

Office 2004



- Office 2004 for Mac Student & Teacher edition
- Office 2004 for Mac Standard edition
- Office 2004 for Mac Standard Upgrade edition
- Office 2004 for Mac Pro edition
- Office 2004 for Mac Pro Upgrade edition

From the 1st November 2006 to 12th February 2007 Microsoft will offer customer the choice of a Bonus Wireless Laser Notebook Mouse (valued at \$99.99 RRP) or a \$50 Cash back with any purchase of an Office 2004 for Mac edition.

Microsoft Works 8

Works 8 is the latest version of the popular essential home productivity software. It includes a word processor, spreadsheet, database and calendar. Plus, Works 8 has new, professionally designed templates and a new tool to help organise common projects.



Buy Works 8 & Upgrade to Office for less!

Our Price **\$82** **Save \$17**
WebCode MSC2920

Microsoft Windows XP Pro with SP2



- Full (MSS9500) **\$425**
- Upgrade (MSS9502) **\$297**

Microsoft Windows XP Home with SP2



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Upgrade guarantee

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Visual Studio 2005 Professional Edition

The comprehensive tool for developers working alone or in small teams to deliver the full range of applications on the Microsoft platform. Intuitive and powerful, Visual Studio Professional 2005 speeds the development, debugging and deployment of applications for Windows, the Web, and mobile devices.

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- Develop faster with enhanced visual designers and editors. Streamline development of all tiers of your application and improve XML editing and XSLT debugging with intuitive visual designers.
- Create dynamic, data-enabled applications. Quickly create data-driven applications using an integrated data access, design, and reporting environment.
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- Tackle any development task. Create robust applications using the Microsoft® .NET Framework 2.0, the .NET Compact Framework 2.0, and native code all supported by Microsoft Visual Studio® 2005.

Standard Academic (MSA9848) **\$111**



Professional Edition	Professional Edition Upgrade	Standard	Standard Upgrade
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WebCode MSS0067	WebCode MSA9847	WebCode MSA9849	WebCode MSA9850

SQL Server 2005

SQL Server 2005 is Microsoft's next generation data management and analysis solution that will deliver increased security, scalability, and availability to enterprise data and analytical applications while making them easier to create, deploy, and manage.

- SQL Server 2005 provides the highest productivity for developers building data-driven applications. SQL Server 2005 enables IT professionals to focus on high value tasks by reducing time spent on development, routine operations and management.
- A comprehensive business intelligence platform, with an integrated environment for data integration, analysis, and reporting. Enables organisations to better use insight for enhanced decision making.
- An enterprise-grade database platform that is ready to run the most demanding mission critical applications, with proven performance for some of the world's largest data warehousing and OLTP systems.
- Enables you to confidently deliver highly reliable, available applications to your employees. Provides enterprise scalability allowing you to quickly build and deploy demanding applications. Delivers advanced capabilities to help you secure your organisations' information assets.



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Our Price \$1262 Save \$114	Our Price \$684 Save \$34	Our Price \$2947 Save \$267	Our Price \$1049 Save \$52
WebCode MSS8256	WebCode MSS8254	WebCode MSS8247	WebCode MSS8245

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Pro Edition Academic*
Our Price \$229 Save \$70
WebCode.....MSA4222

MS Office 2003

Microsoft Office 2003 Editions deliver significant improvements over previous versions of Office, including:

- Advanced e-mail management tools to help you fight back against spam and viruses better than ever before.
- Improved automatic document recovery and compatibility with older files, which mean fewer worries about lost data.
- Brand new collaboration features to allow you to share work easily and stay connected anytime, anywhere.

MS Office 2003 Editions work best with Windows XP

- If you use Windows XP or Windows 2000, then Office 2003 is the right choice for you.
- If you use Windows 98 or Windows Me, you should consider upgrading to Windows XP.

Standard Edition upgrade	Standard Edition Full	Small Business Upgrade	Small Business Full
Our Price \$359 Save \$65	Our Price \$593 Save \$81	Our Price \$418 Save \$81	Our Price \$665 Save \$84
WebCode.....MSA4221	WebCode.....MSA4220	WebCode.....MSA4226	WebCode.....MSA4225

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Student & Teacher Edition*	Pro Edition Upgrade	Pro Edition Full
Our Price \$204 Save \$45	Our Price \$488 Save \$86	Our Price \$727 Save \$122
WebCode.....MSA4237	WebCode.....MSA4224	WebCode.....MSA4223

Microsoft Visio 2003 Std

Microsoft Office Visio 2003 gives business and technical users the power to visualise and communicate ideas, information, and systems. Use the simple, flexible tools in Visio 2003 to easily create business and technical charts and graphics that capture your inspiration and communicate it with impact.

Standard Upgrade (MSA4245) **\$154**
Full (MSA4244) **\$308**

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Academic*
Our Price \$97 Save \$11
WebCode.....MSA4243

Microsoft FrontPage 2003

Use enhanced design tools to produce better looking Web sites. Generate better code, or expand your code skills. Use built-in scripting tools for interactive results. And with professional coding tools, you can write code faster, more efficiently, and with greater accuracy. Connect with people and information in new ways by building Extensible Markup Language (XML) data-driven Web sites.

Upgrade (MSA4217) **\$165**
Full (MSA4216) **\$319**

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Academic*
Our Price \$148 Save \$11
WebCode.....MSA4215

Terms & Conditions

Purchase a genuine Microsoft® Edition of Office 2003 in the promotional period and receive the closest corresponding 2007 edition for [\$27.00] including postage and handling. The promotional period for purchase is 26 October 2006 and 28 February 2007. For full details and terms and conditions to claim your upgrade product please visit www.microsoft.com/upgradeguarantee. Only Offer complete applications received by Microsoft at PO Box 1037, North Ryde NSW 1670 on or before 5pm (Sydney time) 31 March 2007 will be eligible to receive the offer. Participant(s) will forfeit claims not made by this date. Upgrades will be mailed out from 1 February 2007 please allow 4-6 weeks delivery. ©2006 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft Office logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other Countries.

One Note 2003

OneNote 2003 replaces the need for a pad and pencil. Capture, organise and access notes on your laptop, desktop or Tablet PC. Record voice in a meeting and use OneNote to mark each new topic of conversation.

Academic (MSA4227) **\$75**

Our Price \$145 Save \$12
WebCode.....MSA4228

Microsoft Visio 2003 Pro

Microsoft Office Visio Professional 2003 includes a full range of diagrams for business and technical professionals to create network and directory service diagrams, software, database, website diagrams, engineering drawings and building space and floor plans.

Pro Upgrade (MSA4242) **\$385**
Full (MSA4241) **\$759**

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Our Price \$215 Save \$30
WebCode.....MSA4240

Microsoft Publisher 2003

Publisher 2003 is a comprehensive solution for creating and publishing a wide variety of publications for desktop printing, commercial printing, e-mail distribution, or viewing on the Web. Publisher 2003 looks and works more like other programs in the Microsoft Office System, making it easier to use the right Office tool for the task.

Upgrade (MSA4235) **\$155**
Full (MSA4234) **\$269**

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Our Price \$138 Save \$21
WebCode.....MSA4233

MS Project Standard

The new version of Microsoft's core project management program. With familiar, easy-to-use tools, Project Standard enables business managers to manage projects independently from their desktop.

Upgrade (MSA2054) **\$530**

Full (MSA2053) **\$919**



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Our Price \$104 Save \$9
WebCode.....MSA2052

MS Project Professional

The enterprise project management program, works along with Project Server 2003 and Project Web Access to help you more effectively plan projects, better manage resources, and establish organization-wide repeatable processes.

Upgrade (MSA2057) **\$925**

Full (MSA2056) **\$1535**



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Academic*
Our Price \$287 Save \$22
WebCode.....MSA2055

Microsoft InfoPath 2003

Microsoft Office InfoPath 2003 helps you gather information flexibly and efficiently in rich, dynamic forms. Now you can more effectively share, reuse, and repurpose information throughout your team or organisation - improving collaboration and decision making.



Academic*
Our Price \$149 Save \$10
WebCode.....MSA4218

Total Training for Adobe Photoshop CS2

Explore the endless possibilities of digital imaging with Total Training for Adobe Photoshop CS2. The comprehensive videos are indispensable for getting up to speed on Adobe's flagship graphics program. Learn from Photoshop Hall of Famer, Deke McClelland, as he presents 21 hours of valuable tutorials.



Training DVD
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WebCode.....TOT0026

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Training DVD
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WebCode.....TOT0058

Total Training Adobe Acrobat 8 Professional

Master the most powerful document management software with Total Training For Adobe Acrobat 8 Professional. We unveil the software's many capabilities to simplify sharing spreadsheets, presentations, brochures, and graphics across different hardware and software platforms.



Training DVD
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WebCode.....TOT0057

Adobe Acrobat 8 Professional

Adobe Acrobat 8 Professional software enables business professionals to reliably create, combine, and control Adobe PDF documents for easy, more secure distribution, collaboration, and data collection. Combine files from multiple applications, collaborate on documents via e-mail or server, and collect information with electronic forms. Protect sensitive information with passwords and permissions. Enable users of Adobe Reader software (version 7.0 or 8) to participate in document reviews, fill and save forms, and digitally sign documents.

Product Highlights

- Create and optimize Adobe PDF documents
- Combine files from multiple applications
- Enhance and extend document collaboration
- Streamline data collection with Adobe PDF forms
- Apply advanced document security and controls

Top reasons to buy Adobe Acrobat 8 Professional

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- Create advanced forms — Design dynamic, interactive forms to collect and aggregate data through email or on the web with included Adobe LiveCycle Designer software (Windows only)
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Adobe Photoshop Elements 5.0 plus Adobe Premiere Elements 3.0

Complete photo and video editing made easy
Adobe Photoshop Elements 5.0 plus Adobe Premiere Elements 3.0 software combines two powerful yet easy-to-use products to deliver the most complete photo and video editing solution. Entertain friends with unique cinematic slide shows and dramatic freeze-frame effects, create personalized DVDs, and easily share on the web.

Bring out the best in your photos

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- Show photos in creative, entertaining ways
- Easily find and view all your photos and video clips

Bring your home videos to life

- Get started quickly creating home videos and DVDs
- Wow your audience with amazing effects
- Share your videos virtually anywhere



Photoshop Elements 5.0 plus
Premiere Elements 3.0 Academic.
Our Price **\$149** Save **\$47**
WebCode.....AEP9528

Photoshop Elements 5.0 plus
Premiere Elements 3.0
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WebCode.....ALD9598

Adobe Premiere Elements 3.0

Adobe Premiere Elements 3.0 software makes creating and sharing impressive home videos a snap. Burn your footage to DVD in two simple steps, complete with a DVD menu and scene index, or quickly assemble your movie in the new Sceneline, where you can drag and drop to arrange clips and add effects and enhancements. You can even edit and preview your movie in one convenient window. When your movie is ready, share it on the web, on mobile phones, and virtually anywhere else.

Product highlights

- Quickly and easily create videos and DVDs
- Add professional-quality effects and transitions
- Share on the web, on mobile phones, and more

Top new features

- Easily assemble your video clips in the Sceneline
- Edit and preview in one convenient place—the Monitor window
- Count on support for the latest video devices
- Share on mobile phones and handheld devices.
- Have fun with stop-motion animation
- Narrate your stories



Create dramatic freeze-frame effects or use individual video frames to create professional-looking DVD covers and labels.

Academic
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WebCode Mac.....AEP9524	WebCode Mac.....ALG9521	WebCode Mac.....ALG9525	WebCode Mac.....ALD9593
WebCode Win.....AEP9521	WebCode Win.....ALG9523	WebCode Win.....ALG9526	WebCode Win.....ALD9594

Adobe Acrobat 8.0 Professional

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Professional 8 Full \$668

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WebCode Win.....AEP9523

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WebCode Win.....AEP0478

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WebCode.....PGN0218

Sams Teach Yourself Adobe Creative Suite All in One

Sams Teach Yourself Adobe Suite All in One has all the answers for beginning users of Adobe's graphics products in one big, easy to use book. It doesn't assume the reader wants to learn how to use just one product, but covers multiple products and technologies together in a logical, well-integrated fashion.

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Adobe Photoshop CS2 Gone Wild

A full-color cookbook of ideas, with step-by-step instructions for creating way-out, fun effects for photography, Web design, and commercial art. Among nearly 50 effects presented are type, lighting, and photographic effects, photo manipulations, visual puns, art styles, and wild backgrounds. Shows the reader how to dive into the fun stuff, without a lot of text and theory.

Book
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Corel Painter IX.5 Academic

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Corel Painter Essentials 3

A complete home digital art studio that helps you turn photos into stunning paintings. Capture your special memories with beautiful, hand-made digital art keepsakes, perfect for sharing with friends and family, and for framing. It's never been easier to learn how to draw and paint, with the included video training and tutorials.



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The easiest way to get professional-looking photos - fast!

Top Reasons to Buy:

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Easy-to-use:

Get stunning results right out of the box with a Learning Center that can help you complete any photo project in minutes

Professional Quality:

You can have studio-quality photos without any of the training or spending the money on professional photos

The Best Value for the Money:

All the powerful editing controls you usually find in photo editors that cost hundreds of dollars more, plus one-of-a-kind photo tools you can't find anywhere else!

Corel Paint Shop Pro Photo XI is the ideal choice for anyone who wants extraordinary photos. Filled with one-of-a-kind photo tools, automatic photo fixes, precision editing controls and 100s of unique special effects filters, Paint Shop Pro Photo is sure to please everyone with a digital camera. Fix brightness, color and photo imperfections; create photo compositions full of depth and imagination; give photos a unique and exciting look, and there's a new built-in photo organiser to keep all your photos in order. Plus, with a Learning Center to help first time users get started, Paint Shop Pro Photo is the easiest way to get professional-looking photos - fast!



Education
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Academic
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Technology & Business
Magazine,
February 2006

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QuarkXPress 7

The industry-leading software for design and layout

QuarkXPress 7 is a tool that will give you amazing creativity and rock-solid productivity. Industry experts are united in calling QuarkXPress 7 one of the most significant upgrades the application has ever seen. Much more than a page layout tool, QuarkXPress provides proven performance with graphics and colour management text processing, Web-page design, XML output and more!

QuarkXPress is powerful layout software with an intuitive, versatile interface that lets you combine writing, editing, and typography with colour and pictures to produce dynamic final output. QuarkXPress is widely used by magazines, newspapers, advertising agencies, typesetters, printers, corporate publishers, design firms, catalogue houses, book publishers, and form designers. It is also used by businesses with publishing requirements.

New features include:

What's hot for designers & layout professionals:

- Transparency and drop shadows
- Composition zones
- New measurement palette
- Unicode and OpenType
- Enhanced picture effects and Adobe Photoshop integration
- Quark job jackets
- Shared content
- Tables enhancements

What's hot for print service providers:

- PDF/X
- Output styles
- PPML output
- Redesigned colour manager
- Quark job jackets



Our Price	Save	Our Price	Save	Our Price	Save
\$235	\$284	\$565	\$85	\$1700	\$95
WebCode Mac.....	QUA0045	WebCode Mac.....	QUA0042	WebCode Mac.....	QUA0040
WebCode Win.....	QUA0044	WebCode Win.....	QUA0043	WebCode Win.....	QUA0041

ACT! by Sage 2007 (9.0) - Standard

With more than 2.5 million users, ACT! by Sage is the #1 selling contact and customer manager that helps you make contact, build relationships, and get results. Renowned for its ease of use, ACT! can be tailored by each user and offers robust integration with the tools you use everyday, such as Outlook, Microsoft® Office, Lotus Notes®, and handheld devices.

Customer Database Instantly access key contact and customer information from one central source, and share it across your organization. Manage up to 50,000 contacts, work with 1-9 users sharing the same database

Stay Organised Stay on top of your deliverables with multiple Calendar views within ACT!. Calls, meetings, and to-do items can be filtered by priority, date range or user, even displaying totals for each type of activity

Record Customer History Create a running history with each contact

Mail Merge correspond with multiple contacts, either via e-mail or paper correspondence, and automatically track a history on each Contact record

E-mail Utilise direct integration with outlook email while working on ACT!

Track Sales Opportunities from initial inquiry through close utilizing the standard sales process or a process customized to suit your business

Report on Activities Instantly access contacts or detail using advanced Lookups or Keyword Searches

Information on the go Link to a Palm OS or Pocket PC device

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Upgrade (TCA0085) **\$158**
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\$260	\$19
WebCode.....	TCA0084

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Make contact. Build relationships. Get results.

Scalable to accommodate larger workgroups or teams*, ACT! Premium for Workgroups delivers all the features and functionality of ACT! while providing your organisation with the centralised administration, advanced contact and user security, advanced opportunity tracking and deployment options required to drive your business.

Manage up to 100,000 contacts

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Instantly access detailed contact and customer information, manage team calendars and activities, capture all customer communications, track opportunities throughout the sales process, and report on overall team effectiveness

Thorough Opportunity Tracking provides additional insight

Advanced Workgroup Functionality boosts team productivity Increase team efficiency with advanced scheduling and calendar functions

Advanced security provides additional data control manage security by user, by contact, and by field and assign up to five security levels to allow different access to data and features

Centralised administration allows for quick user set-up delivers a host of administrative functions designed specifically to meet the needs of larger organisations

Flexible deployment and Remote access Options ACT! Premium for Workgroups works with ACT! Premium for Web for use in a standalone or mixed use environment.

*ACT! Premium for Workgroups EX Edition - for up to 30 users and a database size of 4GB
ACT! Premium for Workgroups ST Edition - for 30+ users, more scalability, ability to leverage off a dual server environment. Please call for pricing



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WebCode.....	ACT2151	WebCode.....	ACT2150

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Accelerate your creative workflow and increase your pipeline efficiency. Autodesk® 3ds Max® 9 3D animation, rendering, and modeling software lets game developers, design visualization professionals, and visual effects artists maximize their productivity and tackle challenging animation projects.

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- Accelerate Creative Workflow
- Create Realistic, True to Life Renderings
- Streamline Your Facility Workflow



Image courtesy of Blur Studio



Image courtesy of Blur Studio



Image courtesy of Red Rover Animation



Image courtesy of Act3 Animation

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\$258	\$17
WebCode.....	DIS0034

Nuance Dragon Naturally Speaking 9 Mobile Edition

For the busy professional moving between clients, home and the office, flexibility is a must. The new Dragon Naturally Speaking Mobile solution lets you dictate documents and notes on the move. Back in the office simply plug the recorder into the PC, transfer your file and let Dragon Naturally Speaking Preferred automatically transcribe your dictation. No need to rely on manual transcription – saving you time and money! Dragon Naturally Speaking Mobile delivers the performance that mobile professionals demand. It includes the Dragon Naturally Speaking 9 Preferred software, Phillips digital recorder, special linking software and a high-quality headset microphone.

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Academic (NUA0033) \$69



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Nuance PaperPort 11

PaperPort 11 is the easiest way to turn piles of paper & photos into organised PDF and JPEG files. PaperPort produces perfect scans with the push of a button. Your documents are displayed as thumbnails on a unique visual desktop for fast browsing. End the frustration of looking for paper or digital documents by searching for words inside your files, with the exclusive all-in-one search. Save time and know that important documents and photos will never be lost. PaperPort is perfect for your home or small office.

Academic (NUA0013) \$150
5 User (NUA0011) \$790



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Nuance OmniPage 15

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Academic (SCA0049) \$225



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WebCode.....SCA0044

Nuance PDF Converter 4 Professional

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WebCode.....NUA0025

Dragon Naturally Speaking 9 Preferred Edition

Dragon Naturally Speaking Preferred 9 gives small business and advanced PC users the power to create documents, reports, emails and more – all by speaking! Fast, easy and amazingly accurate, it's over three times faster than typing. No script reading required to get started! Just use your voice to dictate and edit in any Windows application.



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Nuance PaperPort Professional 11

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Academic (NUA0015) \$280
5 User (NUA0012) \$1500



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Academic (SCA0050) \$695



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WebCode.....AUT0116

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WebCode.....AUT0128

AutoSketch 9

AutoSketch 9 software provides a comprehensive set of CAD tools for creating precision drawings—from electrical details to floor plans, from conceptual sketches to product specifications, and much more. Offers straightforward drafting in a Windows XP-like environment plus tutorials and wizards for a fast start.



Our Price **\$220** Save **\$22**
WebCode.....AUT0077

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BECAUSE BUYING ISN'T

See page 2 for details!

Top Ten Data Protection Tips for SMBs

1. Step up to RAID
Storing data on a server disk or a non-RAID external disk array leaves you vulnerable to data loss as a result of hardware failure. A failed disk could cause you to lose all the vital business information created after your previous backup. Storing backups on a RAID disk array, such as the EMC CLARiON AX150, provides SMBs with a new level of advanced functionality and data protection. The high degree of redundancy inherent in RAID protects your data against disk, component, or power failure.

2. Take advantage of shared storage Consolidate your storage. A shared storage solution is efficient and convenient. A disk array eliminates the need to constantly monitor storage on individual servers. It avoids the expense and inconvenience of acquiring too much storage for some computers and too little for others.

3. Be sure your storage can scale to meet your needs As a business grows, so does the amount of data needed for day-to-day activities. Is your storage scalable? Will your storage solution grow as your company expands? An SMB needs the flexibility to quickly and easily increase disk space for shared storage or backup capabilities. To provide backup storage for other servers, desktops, or notebooks, your shared storage solution must be easily expandable to deliver additional storage capacity.

4. Choose iSCSI or Fibre Channel Whether you opt to use iSCSI or Fibre Channel depends on the needs of your business. iSCSI is a natural choice for most SMBs. It keeps costs down by using commodity cables with standard GigE ports and switches, which are also easier to set up and configure for most IT departments.

5. Protect everything Select business-class backup software, such as EMC Retrospect, that protects more than just files and folders. Backup software should protect all your computers, support the most popular operating systems, and back up all the data necessary to restore your computer in the event of a failure. Some backup strategies protect only file servers and business-critical application servers.

EMC Retrospect 7.5 Editions Retrospect Multi Server

Preferred EMC Retrospect Multi Server Edition delivers powerful, easy-to-use data protection for small and medium businesses. Installed on a Windows computer, it automatically adjusts backup operations to reliably protect servers, desktops, and notebooks running Windows, Macintosh, Linux, Solaris, NetWare and VMWare, as well as 24x7 applications. Used in thousands of businesses worldwide, Retrospect provides best-in-class backup to disk, unparalleled restore accuracy, and AES encryption of backup media for regulatory compliance with HIPAA, California SB 1386, and the PCI Data Security Standard.

- Retrospect Single Server (DAN0040) **\$979**
- Retrospect Small Business Server Premium (DAN0041) **\$1045**
- Retrospect Small Business Server Standard (DAN0038) **\$699**
- Retrospect Disk-to-Disk (EMC0001) **\$537**
- Retrospect Professional (EMC0002) **\$155**

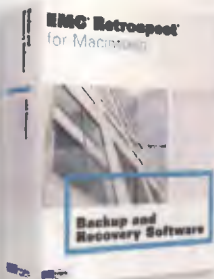


Multi Server
Our Price **\$1850** Save **\$354**
WebCode DAN0039

EMC Retrospect 6.1 Editions For Mac Retrospect Server

Retrospect is the #1 business backup software for Macintoshes. Retrospect Server Edition protects 100 networked Macintosh, Windows, or Red Hat Linux desktop and notebook computers, plus Mac OS servers. Retrospect 6.1 surpasses the terabyte limit when protecting Xserve servers and Xserve RAIDs, and supports advanced SCSI and Fibre Channel tape library features including import/export slots, barcode inventory, cleaning tapes, and more than 128 tape slots. Client licenses are available to protect additional computers. The product CD contains both Retrospect 6.1 for backing up to Mac OS X (10.1.5 through 10.4 Tiger) and Retrospect 5.1 for backing up to Mac OS 9.

- Retrospect Workgroup (DAN0030) **\$685**
- Retrospect Desktop (DAN0029) **\$209**



Our Price **\$1095** Save **\$144**
WebCode DAN0031

RepliStor SMB Edition

EMC RepliStor SMB Edition replication software enables small and medium businesses to protect a critical Windows file or application server by continuously replicating data to a second Windows server. After an initial synchronization of the data, EMC RepliStor SMB Edition copies any new or changed data. It replicates files, directories, shares, and registry keys, providing a single up-to-the-minute restore point that minimizes potential data loss due to hardware failure. Protect 24x7 business applications including Microsoft Exchange Server and Microsoft SQL Server. Replicate data from a remote computer to a central location for backup. Transmit data securely over the Internet or across a LAN.



Our Price **\$1362** Save **\$137**
WebCode EMC0016

VisualSRM SMB Edition (2 TB capacity)

EMC VisualSRM SMB Edition storage management software enables small and medium businesses to stay ahead of data growth and rein in costs while meeting their business needs. It provides a central location for monitoring storage usage and setting automated management policies to ensure that storage is being used optimally and is always available for critical servers. It provides a clear picture of storage consumption by computers, applications, and users. Create policies to control storage consumption, eliminate redundancy, and reclaim wasted space. When a storage limit is reached, EMC VisualSRM SMB Edition sends notification or automatically deletes, moves, or compresses files to free storage.

- Additional 1 TB Capacity for VisualSRM SMB Edition (EMC0018) **\$1362**



Our Price **\$1362** Save **\$137**
WebCode EMC0017

eRoom SMB Edition 25 Users

EMC eRoom SMB Edition collaboration software provides Web-based collaborative workspaces to help teams in small and medium businesses share information, manage projects, and achieve on-time delivery of quality products, services, and supporting materials. Employees, partners, and suppliers-even groups spread across multiple locations and time zones-work together more effectively through EMC eRoom SMB Edition's easy-to-use and highly secure workspace. You can use EMC eRoom SMB Edition right out of the box. An intuitive browser interface is universally accessible, easy to use, and adaptable to the requirements of each project or process. User-defined dashboards deliver instant visibility into individual projects or connected projects across multiple workspaces.

- eRoom SMB Edition-10 Users (EMC0021) **\$1408**
- eRoom SMB Edition-5 Users (EMC0022) **\$701**



Our Price **\$3394** Save **\$214**
WebCode EMC0020

See page 2 for details!
smart buy club 3% rebate
Did you know that you can get up to 3% rebate on every order? www.csw.com.au/smartbuy

EMC CLARiiON AX150 Series

EMC CLARiiON AX150 series disk arrays enable small and medium businesses to consolidate and share storage efficiently among multiple computers. The AX150 is ideal for performing fast, reliable backup to disk. By combining the capabilities of EMC's renowned CLARiiON RAID architecture and Serial ATAII (SATAII) disks, the CLARiiON AX150 delivers easy-to-use, highly reliable data storage at an affordable price. The CLARiiON AX150 is available in single controller or dual controller models. Both models provide up to 6 terabytes of storage for Windows, Linux, Solaris and NetWare servers directly or through a storage area network (SAN) using high-speed Fibre Channel or iSCSI connections.

CLARiiON AX150 Base Model - Single Controller

- Single controller with (3) 250GB drives, Fibre Channel (EMC0003) **\$8140**
- Single controller with (3) 250GB drives, iSCSI (EMC0004) **\$8140**
- Single controller with (3) 500GB drives, Fibre Channel (EMC0005) **\$9664**
- Single controller with (3) 500GB drives, iSCSI (EMC0006) **\$9664**

CLARiiON AX150 Base Model - Dual Controller

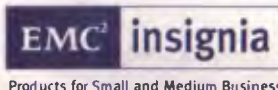
- Dual controller with (4) 250GB drives, Fibre Channel (EMC0007) **\$11,772**
- Dual controller with (4) 250GB drives, iSCSI (EMC0008) **\$11,772**
- Dual controller with (4) 500GB drives, Fibre Channel (EMC0009) **\$13,808**
- Dual controller with (4) 500GB drives, iSCSI (EMC0010) **\$13,808**



CLARiiON AX150 UPS (required with Dual)
120V UPS for AX 150 Dual SP (EMC0011) **\$827**

CLARiiON AX150 Drives
250GB 7200RPM SATA II Drive (EMC0012) **\$654**
500GB 7200RPM SATA II Drive (EMC0013) **\$1089**

CLARiiON AX150 Fibre Channel Add-ons
3M Fibre Cable LC-LC (EMC0014) **\$362**
5M Fibre Cable LC-LC (EMC0015) **\$376**



Will today be the day
your data slips away?



Introducing the EMC® Insignia Solution for Data Protection for Small and Medium Businesses.

Avoid meltdown with the data protection solution you can trust. Every IT pro has had that sinking feeling when data goes missing. That's why EMC Insignia combined the power of the CLARiiON® AX150 disk array with Retrospect® backup and recovery software to create the most reliable and easy-to-manage data protection solution for small and medium businesses.

- Reliably protect your servers, desktops, and notebooks with automated, self-adjusting operations
- Back up and recover fast with the most respected disk-to-disk-to-tape software solution in the industry
- Increase productivity with user-initiated restores
- Maximize backup security with government-certified AES encryption

iSCSI Solution

EMC Insignia Solution for Data Protection - iSCSI Solution (EMC0023) **\$17,348**

Fibre Channel Solution

EMC Insignia Solution for Data Protection - Fibre Channel Solution (EMC0024) **\$17,348**

iSCSI Solution

EMC Insignia Solution for Exchange - iSCSI Solution (EMC0025) **\$18,238**

Fibre Channel Solution

EMC Insignia Solution for Exchange - Fibre Channel Solution (EMC0026) **\$18,238**



where information lives™ To learn more, visit www.emcinsignia.com.

Top Ten Data Protection Tips for SMBs

6. A built-in self-adjusting scheduler can ensure that all your computers are protected by recognizing computers that were not backed up and assigning them a higher priority for the next backup.

7. With disk, backups can be streamed to the media at a constant speed. Use disk on a daily basis for simpler, faster, more reliable backups and restores. For offsite storage and disaster recovery, rapidly stream data from the backup disk to tape on a weekly basis without affecting systems, users, or your network. By keeping the most recent backups on disk, you can restore data directly from the backup disk without wasting time locating and retrieving backup tapes.

8. Enable users to restore their own files. One of the most common restore scenarios involves a user who loses or inadvertently deletes a single important file and need to recover that file quickly. Backup software with a user-initiated restore capability enables users to restore their own files without burdening IT personnel. This feature is especially useful for SMBs protecting a large number of desktop and notebook computers.

9. Use two sets of backup tapes. Make two copies of your backup media and store one in a secure, offsite location to guard against catastrophic events such as fire, flood, earthquake, or other disasters that might destroy your onsite backup media. Rotate your onsite/offsite backup media at regular intervals, bringing the offsite media up to date when you bring it onsite. Traditional backup software requires a complex strategy to protect against failure of backup media or a site-wide disaster. Multiple sets of tapes must be created, tracked, and rotated offsite in a rigid and unforgiving manual process.

10. Protect offsite tapes with AES encryption. Protect your offsite backup media with 128-bit or 256-bit AES encryption to prevent unauthorized individuals from accessing information if backup media is lost, stolen, or misplaced. AES encryption also ensures compliance with an increasing number of government and industry regulations designed to protect private information and prevent identity theft.

Back-up & SAN

RENT SMART
BECAUSE BUYING ISN'T

See page 2 for details!

Quicken Personal 2007

Provides tools to help you manage your finances, prepare for tax time and plan for the future. Personal is for those individuals who want to "actively participate" in the management of their personal finances.

- Track all your bank accounts, credit cards, income and expenses
- Great tax features that will make tax time less painful
- Budgeting tools to help you save and plan for your future



NEW Release
Our Price **\$80** Save **\$9**
WebCode.....QUI0120

QuickBooks EasyStart 2006/07

QuickBooks EasyStart is a breakthrough in simple bookkeeping for new and home-based businesses. Designed for first-time users of accounting software, EasyStart makes it easy to get started with simple, practical tools to manage essential business tasks.

No confusing set-up. No unnecessary features. Just common sense tools that are easy to set up and easy to use.

- Track Sales and Expenses
- Manage GST and BAS
- Reconcile your bank account
- Extensive help menu available from within the software program



TOP BUY PC USER
Full
Our Price **\$89** Save **\$10**
WebCode.....QUI0100



FOR ILLUSTRATIVE PURPOSES ONLY

Quicken Personal Plus 2007

easy home finance & investment organiser

Provides tools to help you manage your finances, prepare for tax time and plan for the future, plus exclusive tools to help you optimise your investment portfolio and maximise tax-saving opportunities.

- Track all of your personal and business bank accounts, credit cards, income and expenses
- Monitor all of your personal and business investments
- Budgeting tools to help you save and plan for your future
- Use the new ASIC FIDO superannuation calculator
- Quicken E*TRADE - seamlessly download your portfolio and trade details directly to Personal Plus from Quicken E*TRADE

Customers who purchase Quicken Personal Plus 2007 full version during 1st Nov 06- 28th Feb 07 are entitled to this BONUS Quicken Messenger Bag via redemption from Quicken.

Please visit www.csw.com.au/promotions for full terms & conditions



Our Price **\$165** Save **\$14**
WebCode.....QUI0121



FOR ILLUSTRATIVE PURPOSES ONLY

Quicken Home & Business 2007

business cash flow, home finances & investments

Combines the best of investing and basic business cash flow management to assist you in combining your personal and business finances, allowing you to obtain a complete picture of your financial wealth. It is designed specifically for businesses that operate using a cash-basis accounting method and do not require reporting on outstanding invoices.

- Track all of your personal and business bank accounts, credit cards, income and expenses
- Monitor all of your personal and business investments
- Create BAS and other business Tax reports
- Create Estimates and Invoices
- Use the new ASIC FIDO superannuation calculator

Customers who purchase Quicken Home & Business 2007 full version during 1st Nov 06 - 28th Feb 07 are entitled to this BONUS Quicken Messenger Bag via redemption from Quicken.

Please visit www.csw.com.au/promotions for full terms & conditions

Upgrade Version	Full Version
Our Price \$183 Save \$16	Our Price \$390 Save \$39
WebCode.....QUI0123	WebCode.....QUI0122

QuickBooks Plus 2006/07

QuickBooks Plus is perfect for small business with employees — it includes integrated payroll and inventory management.

- Invoice, pay bills and track expenses
- Process credit card statements
- Track inventory
- Integrated payroll management
- Integrated BAS and online lodgment

Get the Quicken Advantage!*

Get the Quicken Advantage with QuickBooks – Awarded PC Users' Award winning Accounting Software for 2 years in a row.

- **BONUS 12 months Technical support**
- **BONUS 12 months product Upgrades and updates**
- **BONUS Priority customer service on a dedicated number.**

* Please note Full Terms & Conditions apply



Subscription	Upgrade Version	Full Version
Our Price \$225 Save \$24	Our Price \$345 Save \$44	Our Price \$489 Save \$60
WebCode.....QUI0104	WebCode.....QUI0103	WebCode.....QUI0102

See page 2 for details!

smart BUY club 3% rebate

Did you know that you can get up to 3% rebate on every order? www.csw.com.au/smartbuy

MYOB Accounting 16

Complete Inventory and Business Management software for Australian businesses.

For owner operators. MYOB Accounting helps you manage your businesses requirements including inventory; by tracking, back-ordering, buying and building what you need, how you need.

MYOB Accounting has been designed and built for Australian conditions by Australia's leading business software supplier to allow you to:

- Control inventory
- Process sales and purchases
- Manage receivables and payables
- Handle your banking requirements
- Track GST and BAS
- Prepare budgets
- Email your quotes and invoices
- Comprehensive business reporting and more



Full
Our Price **\$269** Save **\$80**
WebCode.....MYB0061

Upgrade
Our Price **\$219** Save **\$20**
WebCode.....MYB0067

MYOB Accounting Plus 16

Business, payroll and time management software for Australian businesses with employees.

MYOB Accounting Plus is Australia's leading choice for business with employees.

Proudly developed and designed for Australian businesses, MYOB has created an easy to use program with integrated payroll, time billing and inventory management software which allow you to:

- Automate your payroll
- Bill for your time
- Control inventory
- Process sales and purchases
- Manage receivables and payables
- Track GST and BAS
- Prepare budgets
- Email your quotes and invoices
- Comprehensive business reporting and more



Full
Our Price **\$457** Save **\$138**
WebCode.....MYB0062

Upgrade
Our Price **\$288** Save **\$61**
WebCode.....MYB0068

MYOB Premier 10

Powerful multi-user software from Australia's choice and owned MYOB.

Issued with a three-user licence and with further licences available, MYOB Premier gives you the power to manage even the most complex business. Get the complete set of business, inventory, payroll and management features as found in MYOB Accounting Plus, plus more!

MYOB Premier enables Australian businesses to:

- Handle foreign currency transactions and accounts
- Automate their payroll and bill for time
- Manage multi level pricing on inventory
- Analyze their business with detailed powerful reports and more

MYOB Premier comes with a 12 month subscription to MYOB Cover. A subscription that includes FREE phone, fax and email support, as well as automatic software upgrades and payroll updates to government changes and more...



Full
Our Price **\$1282** Save **\$213**
WebCode.....MYB0064

MYOB FirstEdge

For an Australian small business using a Mac. From one easy program, track your GST and prepare your BAS, invoice your sales and manage your expenses and understand your business with detailed reports and more. The only solution for Australian businesses who want to control their business.

- Process sales and purchases,
- Manage receivables and payables
- Track GST and BAS
- Email your quotes and invoices
- Comprehensive business reporting and more



Full
Our Price **\$125** Save **\$24**
WebCode.....MYB0005

MYOB BusinessBasics

With MYOB BusinessBasics you'll save lots of time and effort as it keeps your banking, sales and contact information in one easy to use system.

Issue professional-looking tax invoices, track all money coming in and out, and keep a detailed history of your business transactions. All your information is organised and easy to access so you can spend more time on your business, not on the books.

Ideal for small or home based businesses!



Full
Our Price **\$125** Save **\$24**
WebCode.....MYB0004

MYOB AccountEdge 6

MYOB AccountEdge is Australia's leading choice for businesses with employees working on a Mac.

- Automate your payroll and bill for you time
- Handle foreign currency transactions and accounts
- Control inventory, sales and purchases.



Our Price **\$525** Save **\$70**
WebCode.....MYB0065

MYOB Accounting Plus with Cover 16

MYOB Accounting Plus with Cover includes all the benefits of Accounting Plus, along with a 12month subscription to MYOB Cover which includes FREE product support via phone, fax and email and automatic software upgrades.



Our Price **\$698** Save **\$151**
WebCode.....MYB0063

MYOB Retail Manger 9

- Fast customer service
- Advanced inventory management
- Manages promotions easily
- Includes 12 months of 7 day a week support & updates
- Integrates with MYOB Accounting, Accounting Plus & Premier



Our Price **\$1595** Save **\$395**
WebCode.....MYB0060

McAfee VirusScan Plus AntiVirus, Firewall & AntiSpyware

With the wide variety of viruses, hackers and blended threats lurking on the Internet today, you need more than a simple anti-virus program to keep your PC and files secure. McAfee VirusScan Plus Includes AntiVirus, Firewall & AntiSpyware. It is the essential combination of protection to combat and defeat even the most sophisticated attacks. Surf the Web and download files safely knowing McAfee shields your computer around the clock.

Academic (MCF2155) \$40
Upgrade (MCF2139) \$30



Our Price **\$49** Save **\$10**
WebCode.....MCF2137

McAfee Positioned in Leader Quadrant by Gartner

Gartner, Inc. recently released its "Magic Quadrant for Enterprise AntiVirus, 2006" which has placed McAfee in the leaders quadrant.

"We believe our position in the leaders quadrant can be attributed to the fact that McAfee is the only global company 100% dedicated to security"

McAfee Total Protection for Small Business includes protection against viruses, spyware, spam, hackers and identity thieves.



McAfee Internet Security 2007 - 8-in-1 Protection

McAfee Internet Security Suite is 8-in-1 protection for your PC, important files, identity and online experience. Relax knowing that you always have the latest protection updates, software upgrades and enhancements automatically delivered to you.

- Stops Viruses. Automatically blocks, cleans, and removes viruses so you can surf the Web and download files.
- Blocks Spyware. Blocks spyware before it can install on your computer, and removes existing spyware.
- Stops Hackers. Protects and conceals your computer from hackers so you can surf the Internet safely.
- Improves PC Performance. Cleans clutter off your computer to keep it healthy and running smoothly.
- Backs Up & Restores Files. Automated backup and one-click restore ensures that you don't lose photos, music and important files.
- Secures Your Identity.
- Prevents Spam & E-mail Scams.
- Protects Children Online.

Backup
& Restore

Buy McAfee Internet Security Single user license and receive a Targus 4 port USB hub Free via redemption.

Our Price **\$65** Save **\$14**
WebCode.....MCF2157

Our Price **\$49** Save **\$10**
WebCode.....MCF2147

Our Price **\$79** Save **\$20**
WebCode.....MCF2144



McAfee Total Protection 10-in-1 Protection

Peace of Mind for your Entire Family

- Offers 10 in 1 Protection and complete online and PC security for your entire family.
- Stops Wireless Intruders, Identity Thieves, Spammers, and Predators.
- Protects your PC from viruses, hackers and spyware.
- Backs Up and Restores your photos, music and important files.
- Safeguards your identity and online experience so you can surf the Web, shop, bank, e-mail and instant message safely.
- Intercepts prohibited Web sites, unwanted activity and offensive pictures to keep your family safe.
- Blocks hackers from attacking your wireless network, safeguarding your personal information and transactions.
- Automates file and printer sharing among trusted friends and family.

Backup
& Restore

1 User
Our Price **\$105** Save **\$24**
WebCode.....MCF2150

3 User
Our Price **\$129** Save **\$30**
WebCode.....MCF2151



McAfee Total Protection for Small Business

The always on, always up-to-date, single solution for protecting today's small business.

Does your business need comprehensive 24x7 security for your desktops and servers -- but don't have the time, budget or manpower to manage it yourself? Relax. With McAfee Total Protection for Small Business, we do all the work -- so you don't have to! McAfee experts work behind the scenes 24x7 to update and protect your Desktops and File Servers against viruses, spyware, hacker attacks and identity thieves. Includes everything you need in one, integrated package, with automatic security updates and a single reporting and configuration console via the McAfee SecurityCenter -- so there's no additional hardware or software to buy.

- Downloadable
- Total desktop and server protection, in one integrated package
- Includes Anti-Virus, Anti-Spyware, Firewall and Enhanced Email Virus protection 100% managed by McAfee experts
- Updates automatically 24x7, even for PCs not connected to the Internet
- Single, Web-based reporting and configuration console
- Easy on-line installation and deployment

Contact Us for More Information on hosted Services! 1300 761 761

5 User
Our Price **\$357** Save **\$93**
WebCode.....MCF2170

1 User
Our Price **\$676** Save **\$174**
WebCode.....MCF2171

25 User
Our Price **\$1596** Save **\$404**
WebCode.....MCF2172



McAfee Total Protection for Small Business - Advanced

The always on, always up-to-date, single solution for protecting today's small business - With enhanced Email, Anti-Phishing and Anti-Spam protection. An integrated solution with built-in automatic protection against viruses, spyware, hackers and identity thieves, it provides protection across your small business environment. With the McAfee Total Protection for Small Business--Advanced, you get added e-mail protection against spam, phishing, inappropriate content, and viruses. Through the McAfee SecurityCenter - our easy-to-use Web-based management and reporting console, you can monitor your virus, spyware, firewall, and e-mail protection, customise security policies, and view remediation actions and infection reports.

- Protect your systems automatically - Provides always-on protection with daily, automated security updates
- It's a single, comprehensive solution - Along with the McAfee SecurityCenter management console, it delivers all-in-one desktop, server and e-mail protection to combat viruses, spyware, spam, phishing and hacker attacks
- Easy to use, easy to install: Single online installation gives you proactive protection from viruses, spyware and hacker attacks; and for advanced e-mail protection, simply redirect your mail exchange record to McAfee
- Affordable security and support: The annual subscription ensures continuous protection with automatic updates and upgrades, along with around-the-clock technical support—all for one low cost

Total Protection Advanced requires that you own a unique email domain and a mail server with a static IP address

5 User
Our Price **\$241** Save **\$59**
WebCode.....MCF2173

10 User
Our Price **\$438** Save **\$112**
WebCode.....MCF2174

25 User
Our Price **\$992** Save **\$258**
WebCode.....MCF2175



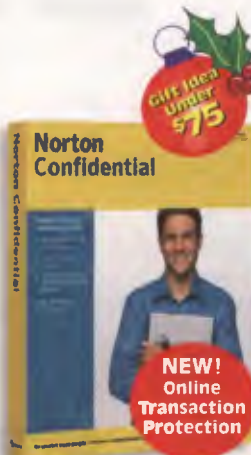
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smartBUY club rebate
3%
Did you know that you can get up to 3% rebate on every order?
www.csw.com.au/smartbuy

Norton Confidential

Safeguard your personal information from online identity theft. Norton™ Confidential protects you when you're most vulnerable: at a Web site while banking or shopping online, and about to submit passwords, account numbers, or other confidential information.

Norton Confidential is one of the first solutions to protect you from fraudulent phishing Web sites and crimeware while you are logging in, making a purchase, registering for a service, or otherwise sharing your confidential information online. Looking for known threats and suspicious behavior, Norton Confidential automatically inspects Web sites—and potentially dangerous or identity-stealing programs on your PC—before any interaction with them. If a threat is detected—such as getting phished by fraudulent Web sites, or having your keystrokes secretly recorded by identity thieves—Norton Confidential blocks your confidential information from the attack.

- **Phishing Protection** – blocks or warns you from visiting known or suspected phishing Web sites
- **Crimeware protection** – protects you from known and unknown keystroke loggers and other malicious programs designed to steal your identity
- **Web site authentication** – confirms the authenticity of high-profile banking, shopping and other sites which require financial or other personal information
- **Confidential info blocking** – blocks your password information from going to unauthorized sites
- **Password protection** – secures and manages passwords



Mac User
Our Price \$69 **Save \$10**
WebCode.....SYM9731

PC User
Our Price \$69 **Save \$10**
WebCode.....SYM9729

Norton Internet Security with Save & Restore Bundle

With Norton Internet Security stay protected from the latest online threats when connecting to the Web. Norton Internet Security™ 2007 is always running in the background to detect and block spyware, viruses, worms, phishing Web sites, and hackers before they can cause harm.

Bonus Save & Restore

Automatically safeguards photos, videos, music, documents & essential system files



*Offer ends December 20, 2006. Camera's awarded every weekday. Terms & conditions apply. See www.symantec.com/au/nz-smile
Our Price \$126 **Save \$24**
WebCode.....SYM9728

Norton Partition Magic 8

Symantec's Norton PartitionMagic 8.0 lets you easily organise your hard drive by creating, resizing, copying, and merging disk partitions. Separate your operating system, applications, documents, music, photos, games, and backup files to reduce the risk of data loss if your system crashes. You can use Norton PartitionMagic 8.0 to run multiple operating systems safely.



Easily organise your hard drive.

Full
Our Price \$95 **Save \$24**
WebCode.....SYM2560

Norton Internet Security 2007

Stay protected from the latest online threats when connecting to the Web. Norton Internet Security™ 2007 is always running in the background to detect and block spyware, viruses, worms, phishing Web sites, and hackers before they can cause harm. In addition to protection updates, Norton Internet Security provides new product features as available throughout your service subscription.

3 User (SYM9720) **\$152**
5 User (SYM9721) **192**
10 User (SYM9733) **\$347**



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Full
Our Price \$82 **Save \$17**
WebCode.....SYM9719

Norton AntiVirus 2007

Norton AntiVirus™ 2007 blocks viruses and spyware with advanced protection. It protects your computer by automatically detecting and removing viruses, spyware, unwanted adware, and Internet worms. And it scans and cleans all email and instant messaging (IM) attachments. In addition to protection updates, Norton AntiVirus provides new product features as available throughout your service subscription.

3 User (SYM9716) **\$87**
5 User (SYM9717) **\$118**
10 User (SYM9718) **\$209**



Full
Our Price \$53 **Save \$7**
WebCode.....SYM9715

Norton Save & Restore Bundle

- Automatically safeguards photos, videos, music, documents & essential system files
- Backs up an entire drive or just selected files and folders
- Recovers your data even when your O/S won't start
- Makes incremental backups, saving space and time
- Encrypts backups for added security
- Makes backups on the fly to almost any media

Bundle Includes:
Seagate Pocket Drive 5.0 GB!

The pocket drive is an elegant, palm-sized 5 gigabyte harddrive



*Offer ends December 20, 2006. Camera's awarded every weekday. Terms & conditions apply. See www.symantec.com/au/nz-smile
Our Price \$195 **Save \$24**
WebCode.....CCG0290

Norton SystemWorks Premier

Optimize your computer experience with Norton SystemWorks 2006 Premier. This powerful solution offers advanced protection, automatically backing up everything on your computer. It also prevents many problems, keeping your computer healthy and optimized. And when trouble does occur, Norton SystemWorks Premier is there to help you repair the damage and recover your system. Its antivirus protection—the most trusted on the planet—protects you from viruses, worms, Trojan horses, and dangerous spyware.

5 User (SYM9694) **\$215**
10 User (SYM9696) **\$359**



*Offer ends December 20, 2006. Camera's awarded every weekday. Terms & conditions apply. See www.symantec.com/au/nz-smile

Full
Our Price \$112 **Save \$38**
WebCode.....SYM9657

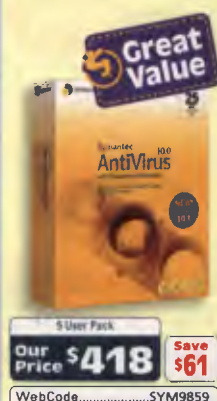
Symantec AntiVirus 10.1

Symantec AntiVirus 10.1 protects your clients and servers against viruses, adware and spyware. Easy, centralised management of virus protection.

5 User with Groupware (SYM9865) **\$605**

10 User with Groupware (SYM9866) **\$1100**

10 User (SYM9867) **\$2628**



5 User Pack
Our Price \$418 **Save \$61**
WebCode.....SYM9859

Symantec Client Security 3.1

More than anti-virus: protection from unauthorised access
Email and the Internet make your business more flexible. However, hackers, viruses, worms, Trojan horses, blended threats, spyware and adware can severely compromise the safety of your computers and business data. Therefore, anti-virus software alone is no longer enough. Symantec Client Security 3.1 seamlessly integrates anti-virus, firewall and intrusion detection actively preventing known and unknown threats from entering your IT system in the first place.

5 User with Groupware (SYM9853) **\$770**

10 User (SYM9848) **\$1050**

10 User with Groupware (SYM9854) **\$1450**



5 User Pack
Our Price \$550 **Save \$80**
WebCode.....SYM9847

Home & Small Business Protection

RENTSMART
BECAUSE BUYING ISN'T

See page 2 for details!

QuickBooks Secrets Online Video Tutorials

CD version - EasyStart and get started CD (CLT0001) **\$53**

Bronze Annual Subscription - Small business without payroll (CLT0002) **\$173**

Gold Annual Subscription - Small to Med business includes Bronze clips plus BAS, payroll, job costing, inventory, multicurrency and more (CLT0003) **\$236**



MYOB Secrets Online Video Tutorials

CD version - Business Basics and get started CD (CLT0004) **\$53**

Bronze Annual Subscription - Small business without payroll (CLT0005) **\$173**

Gold Annual Subscription - Small to Med business includes Bronze clips plus BAS, payroll, job costing, inventory, multicurrency and more (CLT0006) **\$258**



ACT! by Sage Secrets Online Video Tutorials

Bronze Annual Subscription - Using the basics (CLT0007) **\$48**

Gold Annual Subscription - Includes Bronze clips plus scheduling, reports, documents, email, sales pipeline, customizing and more (CLT0008) **\$84**



SOPHOS

secured.

Sophos is a trusted global provider of integrated threat management solutions for business, education and government, providing protection against viruses, spam, Trojans, worms and spyware, whilst simultaneously enforcing corporate messaging policies. Over 35 million users from organisations of all sizes benefit from Sophos' technology.

Protection points and threats

Windows and Mac desktops, laptops and file servers	●	●	●
Microsoft Exchange email servers and message stores	●	○	○
Viruses, worms, Trojans, spyware, adware and potentially unwanted applications	●	●	●
Hackers	●	●	○
Spam and phishing attacks	●	○	○

Products included

Sophos Control Center, version 2.0	●	●	●
Sophos Anti-Virus for Windows 2000/XP/2003, version 6.0 and Sophos Anti-Virus for Windows 98 SE/Me, version 4.6	●	●	●
Sophos Anti-Virus for Mac OS X10.2/10.3/10.4, version 4.8	●	●	●
Sophos Client Firewall for Windows 2000/XP, version 1.0	●	●	○
Sophos PureMessage for Microsoft Exchange, version 2.6	●	○	○
Includes 24/7 telephone, email and online technical support	●	●	●

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Keep IT Secured with the Sophos Small Business Suite, the all-in-one solution for securing your network that is both easy to use and reliable. © Copyright 2006, Sophos plc. All rights reserved. All trademarks are the property of their respective owners

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CA Internet Security Suite 2007

CA Internet Security Suite protects you against viruses, hackers, identity thieves, spyware, spam, offensive websites and other online threats that can jeopardise your privacy, your data and your PC's performance.

Key Features

- Anti-Virus
- Personal Firewall
- Anti-Spyware
- Anti-Spam
- Parental Controls
- Automatic Updates

CA Internet Security Suite 2007 - 3 User (CHY2023) **\$90**

CA Internet Security Suite 2007 - 10 User (CHY2027) **\$235**

*\$30 Cashback available on all products via mail in redemption.
*If purchased with a new PC or notebook, then we will pay an additional \$60 cashback via mail in redemption.
*Therefore as long as the customer has not paid anymore than \$90.00 they will receive all of their money back.

Our Price **\$68** Save **\$31**
WebCodeCHY2019

CA Anti-Virus 2007

CA Anti-Virus provides complete protection against the viruses, worms and Trojan horse programs that can invade your computer and destroy all your data including photos, music and documents.

Key Features

- Scans emails automatically
- Defends against emerging viruses
- Protects files, downloading and attachments

CA Anti-Virus 2007 - 3 User (CHY2011) **\$68**

CA Anti-Virus 2007 - 10 User (CHY2012) **\$168**

Our Price **\$48** Save **\$21**
WebCodeCHY2007

CA Desktop DNA® Migrator 2007

Easily transfer your files, settings and preferences to your new PC.

Key Features

- Transfer All Contacts
- Transfer All Documents, Pictures, Music
- Cross Operating System and Application Migration
- Easy Backup
- Undo File

CA Desktop DNA® Migrator 2007 - 3 User (CHY2037) **\$68**

CA Desktop DNA® Migrator 2007 - 10 User (CHY2038) **\$188**

Our Price **\$47** Save **\$23**
WebCodeCHY2036

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Roxio Easy Media Creator 9 Your Music, Memories, Movies and More

Get the most out of your digital videos, music and photos. Creator 9 lets you create, manage and enjoy them the way you want, on your computer, home theatre, or TV - and even on the move with your iPod, PSP or mobile phone. With dozens of new and improved features and Blu-ray disc compatibility, Creator 9 is the essential software for your digital life

New! Share your memories and your movies

- Easy photo transfer from mobile phone camera to PC
- Emailable photo postcards for every occasion
- Fast and efficient digital video and HD video capture with SmartScan
- Fit-to-DVD compression optimises video quality & disc space
- Video Doctor auto correction of video colour, contrast and brightness
- Impressive new widescreen styles with matching chapter menus
- Easy removal of commercials from set-top DVD recorder discs
- CineMagic auto movie creation-now with professionally designed cool styles, production quality intros and easy scene selection
- Blu-ray disc burning-hours of hi-def or standard definition video
- File conversion of virtually all video formats
- DivX or WMV file conversion for iPod, PSP, Mobile phone and more

New! Your digital life - to go

- Easy music, photo, and video sharing-transfer to iPod, PSP, mobile phone or other portable device
- Simple photo transfer from mobile phone camera to PC
- LiveShare peer-to-peer photo sharing- now supports mobile phones
- Media access and playback from UPnP-compliant living room devices with PC remote control

New! Re-mix and rediscover your music

- Automatic perfect mixes from your PC music library
- 50 hour music DVDs with custom on-screen menus and random play shuffle options
- 'Pre-roll' captures any audio playing on your PC even before you push 'record'
- Automatic renaming of incorrectly tagged song files
- Fast music transfer iPod, PSP or mobile phone

New! Back up fast and copy with ease

- Easy backups with up to 50 GB of data on a single Blu-ray disc
- Movies to go - back up DVDs and copy video to iPod, PSP and mobile phones
- Custom Menu styles from your DVD compilation discs
- Copies and compilations from discs created in set top DVD recorders



Full
Our Price **\$148** Save **\$12**
WebCode.....ADA9518

Roxio DVD Copy 2 Premier

New Roxio Easy DVD Copy™ 2 Premier takes you well beyond other copying software. Make fast, high quality copies of movies, music CDs and DVDs. Compress an entire 9 GB double layer DVD Video to a standard 4.7 GB DVD disc. Maximize video quality and available disc space by selecting which movies, extras, languages, subtitles, and audio formats to include. Create custom DVD and DivX® movie compilations. Play Hollywood movies on your PC. Print personalised disc labels - even directly on disc with LightScribe-supported printers and burners. Now includes support for PSP and video iPod.



Our Price **\$50** Save **\$10**
WebCode.....ADA7222

Roxio Popcorn 2

Transfer your favorite personal video entertainment to DVD, iPod®, PSP™ or mobile phone! Create portable compatible versions of all popular formats including non-protected DVD-Video, QuickTime movies, MPEG files, iMovie projects and other popular video formats. Use the pre-defined settings optimized for standard or high-quality video output, or, define your own custom DivX, MPEG4, or H.264 levels for bit rate, frame rate, and image size.

- Convert movies to iPod, PSP & 3GP (phone)
- Make back up copies of all your DVDs
- Compress dual layer DVDs to fit onto single layer DVDs
- Play back your movies with Dolby Digital support



Our Price **\$95** Save **\$20**
WebCode.....ROX0013

Roxio Toast 7 Titanium - Mac OS

- Create video CDs/DVDs with selectable menu styles
- Download DivX movies & create DVDs to watch anywhere
- Enjoy over 50 hours of music on a DVD
- Span large files, folders & apps across multiple CDs/DVDs

Toast 7 is the best way to save, share and enjoy a lifetime of digital music, movies and photos on CD and DVD. Burn large files across multiple discs; compress and copy DVD movies; add over 50 hours of music to an audio DVD with on-screen TV menus, shuffle play, and rich Dolby Digital sound; burn DivX files into DVDs. Do it all with the fastest and most reliable burning software for the Mac OS - Toast.



Our Price **\$127** Save **\$13**
WebCode.....ADA9480

Trend Micro Internet Security 2007-3 User

New Version!!

- Includes Firewall, Anti-Virus/Spyware detection and removal.
- New TrendSecure™ online/mobile security services.
- Free 24/7 Telephone Support
- Value for Money; Licensed for up to 3 Computers



Our Price **\$82** Save **\$17**
WebCode.....MAN0070

Nitro PDF

- Complete PDF editing and security capabilities
- Reliably distribute documents anywhere in the world
- More cost effective than other PDF software on the market
- Secure documents with passwords and digital signatures



Our Price **\$154** Save **\$45**
WebCode.....NIT0001

Manacomm ZoneAlarm Security Suite 6.5

Protection against hackers, spyware, worms, identity thieves, spam and much more. With 12 months of updates and support it is perfect for the home user. The triple defense firewall goes beyond traditional firewalls to protect your entire PC from hackers, spyware, and other Internet threats. New game mode lets you play uninterrupted.

Pro 6 (CHE0017) \$74
Antivirus 6 (CHE0019) \$74



Our Price **\$73** Save **\$17**
WebCode.....CHE0018

Utility Software

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Pinnacle Studio 10

Pinnacle Studio version 10 provides the ease and power to quickly combine and enhance your precious memories and effortlessly preserve and share them on DVD and beyond.

FREE
HD Digital TV Tuner
Valued at \$189



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www.csw.com.au/promotions

Our Price \$132 **Save \$47**
WebCode.....PIN0113

Pinnacle Studio 10 Plus Titanium

Pinnacle Studio Plus Titanium combines Studio's legendary ease of use with added power and control to further enhance your video for preserving and sharing on DVD and beyond.

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Valued at \$189



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www.csw.com.au/promotions

Our Price \$176 **Save \$23**
WebCode.....PIN0140

Pinnacle Studio 10 Media Suite

Pinnacle Studio MediaSuite version 10 combines Studio Plus' legendary ease of use with the added power and control of a host of connected applications to further manage & enhance your video. Preserving and share more on DVD and beyond.

Academic (PIN0123) \$143

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Our Price \$265 **Save \$34**
WebCode.....PIN0115

Sony Vegas+DVD Production Suite

Combining Vegas 7, DVD Architect 4, and Dolby Digital AC-3 encoding to offer an integrated environment for all video, audio, DVD, & broadcast production. Edit and process DV, HDV, SD/HD-SDI, & all XDCAM formats in real time, fine-tune audio, & author surround sound & dual-layer DVDs.

Academic and
Upgrades available!

Our Price \$638 **Save \$57**
WebCode.....SON0060

Sony Vegas Movie Studio+DVD Platinum 7

With Vegas Movie Studio+DVD Platinum Edition you can import and edit video in nearly any format including HDV. Drag and drop to create movies and slide shows with effects, transitions, and music. Share movies on DVD, PSP™, iPod®, and more. Learn as you go with Show Me How interactive tutorials.

Standard (SON0045) \$143

HDV/DVD
Camcorder
Compatible

Our Price \$198 **Save \$41**
WebCode.....SNY1024

Sony ACID Pro 6

ACID Pro 6 software is a full-featured digital audio workstation for composing, recording, editing, mixing, and arranging audio and MIDI. Its signature pick, paint, and play interface and over 1,000 included royalty-free loops get students started creating music right out of the box.

Upgrade from ACID
Music Studio
(SON0053) \$385
Upgrade (SON0054) \$195
Academic (SON0055) \$325

Our Price \$515 **Save \$34**
WebCode.....SON0052

Sony ACID Music Studio 6

It's easy to create and share your own music with ACID Music Studio software. Over 1,700 loops for building original songs, remixes, and soundtracks. Record, edit, and mix unlimited tracks of audio and MIDI. Enhance songs with professional audio effects. Burn your own CDs or export to popular formats.

Academic
(SON0049)
\$121

Gift Ideas
Under
\$150

Our Price \$149 **Save \$20**
WebCode.....SON0043

Sony Cinescore

Cinescore software automatically generates fully composed, multigenre production music using royalty-free themes in a variety of popular styles. Arrange your media, then create dynamic and effective musical tracks for movies, slideshows, commercials, and radio productions with a single click. Customisable, user-defined settings yield an unlimited number of musical choices.

Our Price \$295 **Save \$34**
WebCode.....SON0058

Sony Sound Forge Audio Studio 8

Sound Forge Audio Studio software is everything you need to produce professional-quality audio on your home computer. Record just about anything, edit and restore audio, burn your own CDs, create streaming media & convert audio files - all using simple commands such as cut, copy, and paste. Includes exclusive Show Me How interactive tutorials.

Academic (SON0056) \$121

Our Price \$149 **Save \$20**
WebCode.....SON0042

Ulead DVD Movie Factory 5

The easiest and quickest way to turn any video and photos into high quality DVD and VCD movies. Burn video straight to disc using no hard drive space. Create impressive motion menus with button and text design control. Produce professional-looking movies to play on any DVD player or computer.

Upgrade (ULE0094) \$70
Academic (ULE0095) \$70

Our Price \$88 **Save \$11**
WebCode.....ULE0093

Ulead CD & DVD Picture Show 4

Ulead CD & DVD PictureShow 4 makes it easy to create entertaining photo slideshows to watch on TV. Turn your photos into slideshows complete with music, transitions, captions, narration and stunning effects in only three steps.

Upgrade (ULE0082) \$54

Our Price \$88 **Save \$11**
WebCode.....ULE0081

Ulead Video Studio 10 Plus

Easy and powerful video editing plus DVD authoring. Features up to 7 video tracks, Dolby Digital 5.1 Surround Sound mixing, hi-definition video support with HD-DVD burning, cool filters and effects, plus full MPEG-4 support for making iPod and PSP videos.

- Total high-definition solution
- Multiple overlay tracks
- Dolby Digital 5.1 Surround Sound
- Ad-Zapper
- Anti-shake filter
- DVD authoring
- MPEG-4 support
- InterVideo WinDVD player included

Upgrade (ULE0091) \$95
Academic (ULE0092) \$115

Ulead DVD MovieFactory 5 Plus

Do MORE with your digital media. Easily create standard or high-definition video, audio or slideshow DVDs, with studio-quality personalized menus. Archive, manage, share and play your data, music, photos and video on CD, DVD, and Blu-ray Disc. Now Includes LabelFlash™ disc labeling technology allowing users to personalize and customize their DVDs with photos, text and graphics.

Upgrade (ULE0100) \$142

Our Price \$175 **Save \$24**
WebCode.....ULE0099

Ulead PhotoImpact 11

A complete image-editing suite with easy-to-use tools for all your image and photo-editing needs. My Workspace fits the program layout to your style. Advanced features match today's digital cameras. Creative tools help you realise your vision, even if you're new to digital photography or want to take creative expression to the next level. PhotoImpact 11 makes professional image editing easy.

Upgrade (ULE0084) \$105

Our Price \$165 **Save \$24**
WebCode.....ULE0083

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FileMaker Pro 8.5

Web Data Delivered. On Demand.

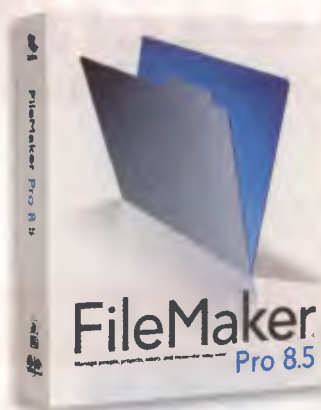
New! FileMaker Pro 8.5 is the newest version of the #1-selling easy-to-use database software that helps you manage people, projects, assets and more – the easy way!

This exciting new version includes the FileMaker Web Viewer that connects your database with the Web data that you rely on everyday – instantly and automatically! Also new is native support for Intel-based Macs, a learning centre, new functions, new scripts, and more!

Here's what's new at a glance:

- FileMaker Web Viewer
- Custom Web Addresses
- Web Software Integration
- FileMaker Learning Center
- Object Functions & Scripts
- Universal Application

Upgrade (FIL1001) **\$261**
Academic (FIL1002) **\$229**



Our Price **\$453** Save **\$46**
WebCode FIL1000

FileMaker Special Offer

For a limited time only, FileMaker Pro 6 customers are eligible to upgrade to FileMaker Pro 8.5 until December 20, 2006. After December 20, 2006 discount upgrade pricing will no longer be available to FileMaker Pro 6 customers. For further information please go to www.filemaker.com.au/promos



FileMaker Pro 8.5 Advanced

FileMaker Pro 8.5 Advanced replaces FileMaker Developer and includes a suite of advanced development and customisation tools, as well as all the new features of FileMaker Pro 8.5, including the breakthrough FileMaker Web Viewer that delivers information from the Web directly to FileMaker Pro 8.5 – based on your FileMaker information. Plus, you'll get native support for Intel-based Macs, an online learning centre, new functions, new scripts and more!

Upgrade (FIL1007) **\$486**
Academic (FIL1008) **\$420**



Our Price **\$846** Save **\$53**
WebCode FIL1006

FileMaker Server 8

High-performance server software for teams of FileMaker users that want to maximise the performance and security of their shared databases while automating backups and other administrative tasks.

Includes robust, real-time database sharing, advanced security options, and powerful, remote administration capabilities so you can:

- Bring your entire team together for maximum productivity
- Increase the performance of your shared databases
- Better protect your data with robust security features

Upgrade (FIL0161) **\$495**
Academic (FIL0162) **\$855**



Our Price **\$1642** Save **\$107**
WebCode FIL0160

Special Offer: FileMaker Workgroup Bundle

Get your team working faster, sharing more and saving big with the new FileMaker Workgroup Bundle! It includes everything you need to get 10 people up and running on FileMaker Pro 8.5. Plus, you'll get 50% off one-year of Maintenance and FileMaker Server FREE so your databases run at peak performance! This offer is valid for purchases made between October 2, 2006 and March 30, 2007.

For more information go to www.filemaker.com.au/promos



Our Price **\$4868** Save **\$54**
WebCode FIL0087

Nero 7 Premium Reloaded

The most convenient media management system of all time! Manage all your media with one single application! Organize your media into personalized, practical libraries. Use the smart sorting functions to combine videos, images and music into professional shows that the family can watch on their DVD players.

Television

- Quick & easy access to all your digital media files from the comfort of your living room using a remote control
- Integrates TV time-shifting, DVD playback, and A/V file playback
- Advanced search options
- Complete multiple tasks concurrently
- Ultimate multimedia experience!

Video

- Easily capture video from digital camcorders, video capture/TV tuner cards
- Powerful video editing tools for movies and personal video
- Customize DVD movies: add new content, chapters & keep subtitles
- Fast and easy DVD9 to DVD5
- Support for all popular media formats including Nero Digital™ (MPEG-4)

Audio

- Rip audio CDs and create music mixes for your MP3s
- Amazing sound quality with AAC & High Efficiency AAC (MPEG-4)
- Create custom Playlists
- Pump-up your music mixes with powerful Beat Editor, Sequencer and Text II Speech converter

Data

- Easy and complete system backup with Nero BackItUp
- InCD 5 Drag&Drop file backup support for (Blu-ray)



Our Price **\$154** Save **\$45**
WebCode NER0012

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per min

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Model: 800

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STYLE YOUR ENTERTAINMENT

Experience stunning performance. Enjoy ultra-sleek design. The I-Trigue 3400 is a top-of-the-line speaker system that lets you enjoy the best of both worlds. Featuring two stylishly designed satellites, each boasting three high-precision NeoTitanium dome micro-drivers and a powerful wooden sub with a 6.5" long-throw driver, the I-Trigue 3400's design complements any living room, while also delivering impressive sonic accuracy and clarity with a clean, strong bass.

- ▶ Advanced NeoTitanium Tri-Array™ speaker technology for accurate, balanced and natural sound
- ▶ Powerful wooden subwoofer with a huge 6.5" long throw driver for louder and deeper bass
- ▶ Dual-flared port for lower and cleaner bass response
- ▶ Wired remote control with a large, easy to manage volume dial and bass level control for personalised adjustment
- ▶ Auxiliary input with exclusive cable for easy connection to your portable audio player
- ▶ Video game adapter for instant connection to your home entertainment device



Bass level control



Headphone jack for private listening

Auxiliary input with
exclusive cable for
easy connection to
digital audio player

NeoTitanium micro-drivers: Clearly superior

Many Creative I Trigue speaker systems feature advanced NeoTitanium micro drivers that deliver exceptionally clear and accurate audio performance. These micro-drivers are delicately crafted with Titanium – a precious metal used notably in spacecraft and expensive jewellery – and are driven by powerful Neodymium magnets. Carefully tuned by our audio engineers, the result is superior sound delivery when compared to common aluminium micro-drivers.



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According to research conducted by Taverner Research (Aust) August 2005